The application of EU antitrust law to (dominant) online platforms

Mândrescu, D.

7 Overall Conclusions and Recommendations

7.1 Answers to the sub-questions of the research

The previous chapters have addressed the sub-questions of this research as noted in Section 1.2 of this dissertation. This section covers the insights provided in the respective chapters that are then merged in order to answer these sub-questions. The answers to the sub-questions are used to set the background note for providing an answer to the main research question addressed by this dissertation, which will be provided in the subsequent section.

7.1.1 Sub-question 1

What are the challenges posed by the inherent characteristics of online platforms for the application of the current EU antitrust law to these actors and what is the nature of the adjustments required in order to tackle them?

This sub-question has been addressed throughout the entirety of the dissertation. Each of the previous chapters has addressed this question from a different perspective and provided an answer to it in varying degrees of depth.

In chapter 2 that provides an overview of challenges posed by online platforms for the application of competition policy it was shown that such challenges appear not to originate from the wording of the treaty provisions (art. 101 and 102 TFEU) but rather from their practical application. Thus the nature of the adjustments or solutions required to overcome these challenges concerns for the most part changes in the practical application of the existing frameworks of art. 101 and 102 TFEU. The challenges identified concern three main steps of the application process of art. 101 and 102 TFEU. These steps are jurisdictional thresholds for legal intervention, the qualification of business practices as prohibited under their scope and the possibility of applying justifications and derogations under these provisions. When it comes to triggering intervention based on art. 101 TFEU the main challenge that arises in the context of online platforms stems from the fact that coordination and collusion among undertakings presupposes the presence of human intervention which may not always be present in fully automatized pricing processes. Such processes are made possible by the great degree of transparency that digital markets display that allows for

constant monitoring between competitors. Furthermore, even when coordination is a result of human intervention but implemented through digital communication means the current notions of agreement and particularly concerted practices may fail to cover such practices as these require a form of conscious human awareness with regard to such actions, which may be very difficult to prove in digital settings.

In the case of art. 102 TFEU intervention requires firstly the finding of dominance which must be reached by defining the relevant market in each case according to the CJEU. Performing this process in the case of platforms is however difficult due to their multisided nature which may require defining several separate yet related markets in which the market power of the concerned platform must be assessed. This entails also that the SSNIP test, which is often used as the main quantitative tool for delineating relevant markets, will have to be applied simultaneously across several markets. Some of these markets will entail products or services which are offered without charge (also referred to as zero priced) as is common in the case of platforms, which will require revisiting the price centered nature of this test. Past these thresholds for intervention, the assessment of the business practices of online platforms and their qualification as permissive or prohibited under art. 101 or 102 TFEU will require a more elaborate analysis than in the past.

While the qualification of business practices as a restriction of competition by object (or effect) or as a form of abuse remains possible, the manner in which such findings are reached requires an analysis that accounts for the multisided nature of platforms. This entails in practice that the assessment of (potential) anti-competitive effects of the investigated practices may need to extend across more than one (relevant) market. Extending the scope of the analysis in such a way is possible under the scope of both provisions and even required to some degree by the CJEU in its judgment in *Groupement Cartes Bancaires* where it noted that cross market analysis is required when two separate, yet related, markets display indirect network effects. The manner in which this should be done, however, is not entirely clear, as the case is the first of its kind, and provides relatively little guidance in this regard. This is unfortunate in the case of online platforms, as these will inherently display a degree of indirect network effects between the various customer groups they serve. Similarly, when evaluating the efficiency arguments put forward by online platforms suspected of engaging in prohibited practices such evaluation must extend to efficiencies generated across multiple separate yet related markets. Although such possibility is feasible under both provisions, the practice of Commission and the recent judgment of the CJEU in *Mastercard* indicate that the success of such arguments depends greatly on the manner in which such efficiencies are accounted for. While cross or out of market efficiencies may be taken into account, the primary focus of the analysis is on the efficiencies that can be identi-

fied with respect to the same parties that are subject to the infringement. In the case of online platforms which operate across multiple markets this requirement may prove to be burdensome as the prohibited practices and corresponding efficiencies may not manifest directly in the same (relevant) market but, nevertheless, still arise by virtue of the indirect network effects that are at play on such platforms. If restricting competition with respect to one customer group of the platform creates efficiencies for a second customer group such efficiencies may (at least partially) benefit the former when the two customer groups display indirect network effects.

Chapter 3 that focuses on the market definition process provides a prime example of how the challenges posed by online platforms for the application of art. 102 TFEU stem primarily from the practical application of this provision. The market definition process is perhaps one of the most difficult challenges that result from the multisided nature of online platforms. It can even be said that it is one of the main drivers behind platform specific regulation initiatives including the recent proposal of the DMA. Nevertheless, this challenge stems from the fact that this process has been made mandatory for the finding of dominance by the CJEU in *its case law.* The provision as such does not mention this requirement and in fact in the early days of EU antitrust law abuse of dominance cases were handled without a market definition. Similarly, in some jurisdictions, like the US and China, such a requirement is not necessary in cases concerning the unilateral behavior of undertakings with significant market power. Accordingly, if the market definition process would not have been made mandatory by the CJEU such challenge would have been less acute. Admittedly, the lack would still require a change to the common practice of the Commission, which would have likely been met with criticism as in case where it chose not to engage in this process as it normally would. However, taking such a course of action could have been motivated by the specific circumstances of cases concerning online platforms which display significantly different characteristics than non-platform undertakings in such a context. This has been done to a certain extent by the Commission in the recent cases against Google. In *Google Shopping* the Commission chose not to apply the SSNIP test when defining the relevant market due to the use of zero pricing by Google. In *Google Android*, however, the Commission chose to overcome this same issue of zero pricing by modifying the price centered SSNIP test into the quality based SSNDQ that determines interchangeability based on quality reductions instead of price increases.

Chapters 4 and 5 that provide an in-depth discussion concerning the qualification of certain business practices by online platforms as abusive behavior further confirm the initial findings of chapter 2. Accordingly, when it comes to the finding of an abuse, the challenges associated with the multisided nature of online platforms concern primarily extending the scope of analysis beyond one (relevant) market. The manner in which such

analysis takes place is not determined by art. 102 TFEU but rather by the Commission's previous practice and most importantly the past case law of the EU Courts which has established the various legal tests for qualifying anti-competitive business practices as abusive under art. 102 TFEU.

Finally, chapter 6 that covers the last stage of the application process, namely the remedy phase, adds another angle for the answer to this sub-question which was not covered in chapter 2. Similar to the case of finding an abuse, as covered in chapters 4 and 5, this last substantive chapter shows that remedy design considerations become more complex when dealing with the characteristics of online platforms and the nature of competition in the markets in which they operate because it often entails taking into account the effects of remedies across multiple markets. Such difficulties do not relate to the wording of art. 102 TFEU, which does not cover the matter of remedies, but mostly to the Commission's previous practice and the case law of EU courts. Nevertheless, to some extent it can be said that the wording of art. 8 of Regulation 1/2003 which, establishes the legal framework for interim measures, does make the implementation of effective and proportionate remedies more difficult in the case of online platforms. This is primarily due to the fact that according to the text of this provision interim measures can only be implemented by the Commission when there is evidence of a potential risk of irreparable harm to competition. Providing such evidence in the case of online platforms is difficult as these are often considered to operate in highly dynamic markets. Therefore, finding such proof in practice will often entail finding proof of market tipping (or at least a tendency thereof) where the respective platform gains an impassable and constantly growing competitive advantage over its competitors in one or more of the markets in which it is active. Finding proof of market tipping (or a tendency thereof), is however, presently more a theoretical than practical option as current practice has yet to find the tools that are suitable for measuring such an occurrence.

Alternatively, an argument could be made that the damage to competition following the exit of existing competitors cannot be remedied by a later entry or re-entry due to the high pace of innovation in the respective market, as was made in Broadcom. However, it is unclear whether such arguments would always survive judicial review in the case of online platforms as not all such actors offer highly complex and specialized services that entail very demanding and costly R&D processes. In light of such difficulties the possibility of flexible remedies may constitute an alternative that fits within the current framework of art. 7 of Regulation 1/2003. Such remedies would consist several layers of behavioral and structural measures that are triggered based on how competition on the affected market(s) evolves following the final decision of infringement. Such remedies would allow accounting for the competitive harm that can be amplified due the (indirect) network effect at play while not exceeding the boundaries of

proportionality. In this respect, although the challenges observed in the case of remedies relate to some extent to the wording of Regulation 1/2003, tackling such challenges can be done mostly through changes in application and interpretation.

7.1.2 Sub-question 2

How should the definition of the relevant market be performed in the case of online platforms in light of their multisided nature?

This sub-question has been addressed in all the chapters of this dissertation to varying degrees. In chapter 2, as noted above, the difficulties associated with the market definition were identified. The findings in this chapter predominantly concern the theoretical challenge of defining multiple relevant markets for one platform and the use of the SSNIP test in settings where the platform service or interaction under investigation is provided free of charge.

Chapter 3 which is focused on this topic in the most specific way encompassed an in-depth discussion of both these challenges and provided guidance for resolving them in practice. Accordingly, when engaging in the market definition process it was noted that the preferable approach would entail firstly identifying the nature of the service or interaction of the concerned platform. Such interactions would in practice either be single-sided or multi-sided matching interactions. Single-sided interactions can be observed when two customer groups are brought together, however, positive indirect network effects are present only in one direction. This occurs for example in cases where consumers are attracted to the platform to watch videos but must first watch a commercial before being able to do as can be seen on Youtube, which matches advertisers with consumers. The increase in the volume of consumers on Youtube may increase that demand of advertisers for the platform but not the other way around. This limited interdependence between the two customer groups of the interaction means that two separate relevant markets can be defined for these respective groups as these will likely have (very) different views on the substitutability of the platform. Consumers may consider other video sharing platforms without advertisements as substitutes while advertisers may consider platforms that do not offer video sharing services as substitutes, as long as they offer a comparable exposure to consumers.

Multi-sided matching interactions occur where two or more customer groups are brought together which display mutually positive indirect network effects. This can be observed most clearly in the case of online hotel booking platforms where, the more hotels a platform has, the more consumers it will attract and vice versa. This relationship between the two customer groups indicates they are quite interdependent when it comes to

their demand for the platform meaning that they will likely have a similar view on substitution. Therefore, in such cases a single relevant market for the platform interaction could be defined. Such a market would consist of alternatives that are considered substitutes for the concerned platform from the perspective of all the customer groups matched by the interaction. In the case of online hotel room booking platforms this would entail a relevant market that consists of outlets that allow both hotel owners and consumers to perform that same task of offering and booking a hotel room. Nevertheless, the demand for the platform interaction or service and views on interchangeability may not always be fully aligned even among the customers of a multi-sided matching functionality. Accordingly, while perspective of all such groups may be required in the context of the legal analysis it is not certain whether a single market approach will always be suitable. Therefore, even in such cases a supplementary substitutability check from the perspective of each of the customer groups interconnected by the respective interaction should be performed.

When the views of the respective customer groups on substitution are (nearly) identical, it can be concluded that the relevant market is most likely the (platform) market consisting of only other platform alternatives that compete with the concerned platform under investigation. In such situations it can be said that the matching interaction or service is indispensable (for the purpose of substitutability) for the respective customer groups connected by it. This would likely occur in situations where the value proposition of the platform for its customer groups is *de facto* access or the ability to interact with (a large volume of members of) another customer group. This is the case with price comparison platforms. Such platforms offer consumers the ability to view offers across numerous sellers and at the same time offer a large scope of exposure to consumers with respect to sellers that place their offers on the respective price comparison website. When the views on substitutability of the customer group vary, it can be concluded that two or more related markets need to be defined covering each of those perspectives. Accordingly, in such cases, the relevant market(s) may consist of non-platform entities that constitute substitutes for the concerned platform from the perspective of one or more of its customer groups. Such outcomes are most likely when the matchmaking interaction or service offered by the platform is not entirely indispensable for meeting the demand of the respective customer groups served by the platform. This can occur for example in the case of online marketplaces as consumers may, under certain circumstances, consider large non-platform retailers as substitutes for the marketplace whereas sellers on the same marketplace cannot consider such players as substitutes since they cannot provide them with the desired access to consumers they seek from the respective marketplace.

The mentioned approach to the market definition for online platforms allows for a process that is more compatible with the commercial reality

of such actors than the current approaches in academia and practice which seem to be based on a platform typology. According to such approaches, the number of markets to be defined in each case concerning online platforms should be determined in accordance with their type. In this regard, the transaction vs. non-transaction platforms, which has been further explored by the Bundeskartelleamt, is perhaps the leading approach. According to this typology the market definition for platforms that facilitate some form of transaction should result in one relevant market consisting only of alternatives that offer such a transaction service. By contrast, platforms that do not facilitate a transaction should lead to the definition of multiple markets. This approach was followed by the US Supreme Court in the recent case of *Ohio v. Amex* where one relevant market was defined for Amex's services with respect to acquiring and merchant banks. Nevertheless, unlike in the case of the Amex payment platform, applying this approach or any approach based on a specific platform typology does not work well in the context of online platforms.

The reason for this limited compatibility is two-fold. First, such approaches will always presuppose a finite number of platform types which is incompatible with the commercial reality of platforms that often display a mix of transaction and non-transaction oriented services. Second, such approaches are concerned with defining the relevant market for the platform as the commonly presuppose that such platforms are predominantly two-sided and the matter of market definition concerns solely a decision between defining one or two markets for the service(s) provided by the platform to its two separate customer groups. Online platforms are, however, often multisided or become multisided at some point, meaning that they provide multiple separate interactions or services that relate to different markets. Accordingly, the market definition in such cases can result in multiple separate relevant markets. In such cases, as discussed in chapter 3, there is no need to define all the (relevant) markets in which the platform is active. Instead, the focus should be on defining the relevant market(s) for the services or interactions associated with the theory of harm that is considered in the context of a specific case as the platform may adopt abusive practices only with respect to some of its services and corresponding customer groups. Such outcome is only possible if the relevant market definition is performed in a manner that is capable of targeting the various platform services separately when needed. This approach can be said to be supported by the Commission's latest practice in *Google Shopping*, approved by the General Court in appeal, where Google's search page was found to consist of multiple services, belonging to separate (search) markets that displayed different degrees of competitive harm.

When it comes to the use of the SSNIP test in the context of the market definition process for online platforms, the discussion in chapter 3 provided that this test will have to be modified in order to remain useful. This modi-

fication is needed in cases where platforms allow some of their customer groups to market use of their services free of charge. In such cases, the SSNIP test cannot be applied to test the substitutability of the platform from the perspective of customers that are provided the service for free as it would lead to a mathematical impossibility; a relative increase of zero with 5-10% will always remain zero. This difficulty has been seen in practice in the *Google Shopping* case where the Commission refused to apply the SSNIP test to Google's search services as these are predominantly offered free of charge. Therefore, in order to maintain the usefulness of the SSNIP test it must be converted into a SSNDQ test where substitutability is tested based on a theoretical decrease of quality rather than an increase in price. This conversion maintains the rationale of the SSNIP test, while making it suitable for circumstances where zero-pricing can be seen in practice in the case of *Google Android*, which was decided after the publication of the articles of which chapter 3 consists.

Adapting the SSNIP into a SSNDQ entails, however, more than simply switching the price parameter with quality parameters. Such a conversion also requires that the legal framework which regulates the use of the SSNIP test is also converted. This means that the Commission would also have to come up with a procedural framework that covers this new test and provides the guidelines for its application. Such guidelines should concern the manner in which quality and the degradation thereof should be tested. As quality, unlike price, is dependent on the service or product that is being assessed, such guidance would in essence have to provide the manner in which the quality criteria for the purpose of the SSNDQ will be selected in each case so as to ensure the legitimacy of the test of its results. This part of the conversion has unfortunately not been addressed by the Commission before, during or after the application of the SSNDQ in *Google Android*. In this specific case, the official decision document indicates that the quality criteria used for the purpose of this test were provided by Google's own developer staff. Beyond this however, no additional information has been provided on how the SSNDQ was performed or on the intentions of the Commission to utilize this conversion in the future. Therefore, the suggestions and concerns addressed in chapter 3 with regard to the procedural aspects of the conversion process of the SSNIP test to the price settings of online platforms remain to be resolved.

Chapter 4, which deals with the assessment of the expansion strategies of online platforms under the test(s) of tying and bundling, displays the importance of an interaction-based approach to the market definition as suggested by chapter 3. In chapter 4 it is shown that expansion strategies, which can be facilitated through tying or bundling practices, can occur on existing platforms as well as across them. Accordingly, an online platform may choose to expand by adding new services or interactions, thereby bringing more customer groups on board. This occurred for example on

Booking.com which started off with a hotel room reservation service and now offers additional booking services such as airplane tickets, rental cars and airport taxis. Alternatively, an online platform can also choose to expand by launching another platform which may be desirable for at least one of its existing customer groups. This can be seen in the case of Uber which launched UberEats at a later stage in time. When online platforms implement such expansions through tying or bundling practices the manner in which the market is defined will determine greatly the scope of anti-competitive practices that can be caught by art. 102 TFEU. Acknowledging that the various interactions or services provided by a platform can constitute separate products, meaning that the market definition process can be performed with respect to each of them, will allow to catch both on-platform and cross-platform anti-competitive expansions implemented through tying or bundling. By contrast, treating the entire range of interactions or services offered by a platform as one product and thus performing the market definition process to the platform as such, based on whether it is a transaction or non-transaction platform, will inevitably fall short of catching anti-competitive on-platform tying or bundling practices.

Similarly, chapter 5 which deals with the assessment of price-related abuses in the case of online platforms further confirms the importance of the suggested approach to market definition covered in chapter 3. Accordingly, when engaging the in assessment of price related abuses the manner in which the relevant market is defined determines greatly the scope of the legal analysis and its outcome. If the relevant market for a multisided platform is defined in a way that treats all of its interactions and services as one single (bundled) service, the legal assessment of its pricing practices will have to address the entire pricing scheme of the platform. Accordingly, if a hotel room booking platform like Booking.com would be accused of charging predatory commissions from hotel owners the assessment of predatory pricing will have to take into account all the costs and profits associated with all the services provided by the platform. By contrast, if the various services or interactions facilitated by Booking.com are considered to be separate, the market definition process would have to be performed with respect to each of these services. At the phase of assessing the potentially predatory pricing behavior of Booking.com with respect to hotel owners, this would entail an analysis that focuses predominantly on the costs and profits associated with the hotel room booking service for which owners are charged. The difference between the two outcomes cannot be overstated. The first approach to the market definition for online platforms allows a lot of room for shifting common costs across the various services of the platform thus making it easier for them to avoid competition law scrutiny. Similar outcomes can also be expected in the case of excessive pricing which constitutes in essence the opposite situation of predatory pricing.

Although not extensively addressed in chapter 6, that manner in which the market is defined with respect to the concerned platform, and its respective services and interactions, will inevitably also have an impact on how remedies will be designed. This is most evident in the case of pricing abuses as the manner in which the market is defined determines the manner in which the corresponding price assessment is made. In the case where an abuse is established, this will also determine therefore what the platform would be required to do in order to be in compliance with art. 102 TFEU. For example, in the case of predatory pricing, whether predation is established with regard to the platform as a whole or only with respect to one of its services or interactions will determine what kind of price adjustment the platform must undertake in order for its pricing practices to be considered non-abusive.

Therefore, the approach to the market definition suggested in chapter 3 will allow performing the market definition process with respect to online platforms in a manner that is compatible with their commercial reality. This in turn will allow competition authorities to scrutinize and remedy their anti-competitive behavior more accurately, particularly when dealing with multi sided platforms that provide or facilitate multiple services or interactions.

7.1.3 Sub-question 3

To what extent is the current framework of non-price related abuses suitable for distinguishing between legitimate expansions and anti-competitive leveraging of market power by online platforms?

This sub-question is addressed in chapter 4 of this dissertation which focuses on the topic of expansion strategies by online platforms and their assessment under the framework of tying and bundling abuses.

A. Expansion strategies

The implementation of expansion strategies by online platforms has been found, by economic and management research, to be an inevitable part of their commercial existence. In the early days of their existence all online platforms will struggle with the same coordination challenge that stems from their multisided nature also known and the chicken-and-egg problem. In order for such actors to exist they must succeed in attracting two or more separate customer groups to the platform in order to provide them with a matchmaking service or interaction which can then be capitalized by the platform. Once the platform is successful in attracting members of two or more separate customer groups, the indirect network effects between such parties will help facilitate growth on the platform to the point when the critical mass needed to make it financially viable is reached. From this commercial milestone onwards the respective online platform will commonly seek to improve and optimize the service or interaction it offers to its respective

customer groups in order to further grow its presence in the market(s) in which it is active and increase its revenue. Such optimization is also referred to as increasing the depth or core base of the platform interaction or service.

In practice such optimization means that the respective platform will try to reduce the various costs incurred by its customer groups when using the platform such as search, information and transaction costs. By doing so the platform is expected to be better able to increase the volume of members of its customer groups and thereby increase the number of profitable interactions on the platform thus generating more revenue. Such optimization can, however, not be pursued in perpetuity and at some point in time the maximum commercial potential of a specific platform interaction or service will have been reached meaning that further optimization is no longer possible or profitable. At that stage the most feasible possibility left for the respective platform to further increase its revenues is to expand.

In practice, expansions can be either on-platform or cross-platform. On platform expansions occur when the respective platform adds another service or interaction to the existing platform. For example, Booking.com started with the hotel room reservation service and now offers also the possibility to book airline tickets, airport taxis and rental cars. Cross platform expansions occur when the owner of the existing platform launches another platform which has a common customer group with the initial platform. For example, after Uber became a known platform for ride sharing and booking it launched UberEats which similarly to the ride-sharing platform also caters to consumers. Such expansions do not only enable platforms to significantly increase their revenues but, and perhaps more importantly, also serve as a valuable strategic tool that allows them to improve their market position. By expanding into another market, whether through on-platform or cross-platform expansions, the respective platform is able to offer at least one of its customer groups a better value proposition and prevent them from switching to competing platforms while also increasing the participation on the platform at the cost of direct and indirect competitors and thus gaining a competitive advantage.

Alternatively, expansions can also be said to be an effective way to fend such strategies, also referred to as 'envelopment attacks', when attempted by established platforms in neighboring markets. For example, vertical search engines like Skyscanner that offer airline tickets price comparison could obtain a competitive advantage over platforms offering a comparable service if it chooses to expand and also allow for hotel room price comparison, which consumers searching for airline tickets are likely to seek as well. At the same time, by adding the hotel room price comparison service Skyscanner would be able to prevent being challenged by an established vertical search engine platform that offers hotel room price comparison which chooses to also offer an airline ticket price comparison service.

In this respect not all expansions are equally effective. From an operational perspective the added service or interaction can involve either a unilateral (or single-sided) matchmaking interaction or a bi or multilateral (or multisided) matchmaking interaction. The former will allow the respective platform to generate additional revenue however it will have limited strategic value. For example, adding a non-search advertising element to a hotel room booking platform may allow the platform to open up to a new stream of revenue, however, it will not attract new consumers to the platform or prevent existing ones from switching since such consumers are not likely to because of such advertisement function. By contrast, by adding a bi-or multilateral matching interaction or service the respective platform will be able to generate more revenue and increase its market power in two or more markets due to the positive network effects at play. For example, if Skyscanner were indeed to add a hotel room price comparison service to its platform such a function would likely also attract more consumers as well as airline companies and hotel owners interested in reaching such consumers to the platform. Such an increase would produce more revenue for the platform and magnify its foothold in the respective markets for airline ticket price comparison tools and the market for hotel room price comparison tools. Therefore, it can be expected that successful expansions, particularly those involving bi-or multilateral matching interactions or services, will have a noticeable effect on competition across multiple markets, which in turn requires ensuring that such strategies are not implemented through anti-competitive practices.

In this regard, the most relevant non-price related abuse that should be considered is that of tying and bundling. This is because such practices offer the greatest potential for the successful leveraging of market power across various markets that is inherently pursued in the context of expansion strategies. Therefore, if platforms were to implement their expansion strategies though anti-competitive practices it is more likely that these would select tying and bundling practices as their preferred vehicle than other types of anti-competitive leveraging. Accordingly, the applicability of the of tying and bundling framework to the practices of online platforms will determine to a great extent the suitability of the framework of non-price related abuses to distinguish between legitimate and anti-competitive expansion strategies.

B. Qualifying expansion strategies as tying and bundling

In order for expansion strategies by online platforms to qualify as tying and bundling practices such strategies must fulfill the criteria set for this form of abuse by the CJEU in Microsoft, namely (i) the concerned platform must have a dominant position in the tying market or the market of one of the bundled products, (ii) the platform must be tying or bundling two separate

products (iii) customers are coerced into obtaining the tied and tying products or the bundled products together.

Fulfilling this test requires firstly that the services or interactions added at the phase of expansion must be considered as separate products or services than those offered by the concerned platform prior to the expansion. This is needed for the first two conditions of the test. In the case of cross-platform expansion this will not be problematic as services or interactions enabled by two separate platforms can hardly be said to constitute one (complex) service. For example, it is hard to see why Uber and UberEats would be considered to constitute parts of one single product or service. An exception to such a finding would require essentially concluding that the respective platforms constitute part of an elaborate ecosystem and the competition across platforms in the markets where they are active predominantly takes place at the ecosystem level rather than at the service level. In the case of on-platform expansion reaching the finding of separate products is more complicated as it requires looking at the various services offered by the platform as separate rather than part of one comprehensive package of services. This in turn requires establishing the nature of competition in the respective markets where the concerned platform is active by virtue of the services or interactions it enables. In practice, this may involve quite some difficult assessment. For example, does Booking.com provide multiple separate services each part of a separate relevant market or does it provide one comprehensive package of services with which it competes as whole against other comparable platforms in one relevant market. In this context the interaction-based approach to the market definition covered in chapter 3 would help make this assessment manageable.

Secondly, a finding of (abusive) tying and bundling practices would require identifying a contractual or technical coercion mechanism with respect to the use of the additional service or interaction. This would occur when an existing platform customer group is pushed into making use (actively or passively) of the newly added service or interaction following the expansion (either on the initial platform or a new one). In practice such actions can take different forms and display different degrees of coercion. The most evident form of coercion would entail making the use of one service or interaction conditional upon the use of a second newly added service or interaction on the respective platform or on a separate platform. For example, this would be the case if airline tickets on Booking.com could only be reserved in combination with a hotel room reservation, or if purchases on Amazon marketplace could only be done with Amazon's own payment system AmazonPay. The dependency across platforms can also be limited to the sharing of data meaning that the use of one platform may entail an obligation to share the generated data with a second separate platform. This can be said to exist to some extent with regard to Whatsapp (outside of the EU) where the use of Whatsapp is conditional upon consumers agreeing to

share their data with other Facebook owned companies. More subtle forms of conditionality and coercion could then be that the use of one platform service or interaction triggers another one on the respective platform. Alternatively, the use of one platform may require the creation of a common profile account on two or more separate platforms which also entails an obligatory sharing of data across such separate platforms. This can be said to occur to a certain extent with regard to the various Google products and platforms that require the use of a Google account that in turn creates a user profile across such services among which data is shared.

Where the respective platform services or interactions help facilitate monetary transactions, the conditionality aspect can manifest in the form of significant monetary incentives. This could occur for example if booking a hotel room on Booking.com would generate a significant reduction for the reservation of an airline ticket on the same platform. Similarly, this would also occur if using Uber regularly would provide consumers with significant discounts on UberEats. Alternatively, the conditionality aspect could also be achieved through 'negative' incentives such as reduced or limited interoperability as well as less favorable contractual terms. For example, this could occur if payments of Amazon Marketplace with AmazonPay would be very easy and offer full buyer protection and payments with other payment solutions would be (significantly) more expensive, technically cumbersome or offer less buyer (or seller) friendly terms. To the extent that such positive or negative incentives are significant these will have *de facto* the same coercive effect as the more evident forms of conditionality mentioned earlier. Finally, the respective platform could use various nudging tactics that drive the respective platform customers into using more than one service of interaction. Although these may achieve in practice the same outcome of getting platform customers to use more than one platform service or interaction (on the same platform or a second one), such action will not fall under the scope of tying or bundling. This is because such actions cannot generally be said to coerce customers into more than a single service or interaction offered by the concerned platform at a time.

Thirdly, in order for expansion strategies to be qualified as anti-competitive these must be able to create a foreclosure effect. The likelihood of such an effect commonly requires looking at the type (technical or contractual) and duration of the tying or bundling practices as well as the market power that the concerned undertaking has with respect to its entire product portfolio. In the case of online platforms these criteria need to be supplemented with two additional variables, namely the customer overlap between the tied or bundled services or interactions and the degree to which these are two or multisided.

The customer overlap between tied or bundled platform interactions requires assessing whether the tied or bundled interactions share a great

deal of common customers. The greater the degree of overlap the more likely it is that the respective platform will be able to leverage its market power from one interaction to another. In practice customer overlap can be evaluated to some extent based on the functional relationship between the interactions that can be one of: complements, weak substitutes and unrelated products. Complements by their very nature are expected to display the greatest degree of customer overlap. For example, in the case of Booking.com the hotel room reservation service and the airline ticket booking service will predominantly serve the same group of customers (mainly consumers) that will often be interested in both. Thus, tying or bundling these services together with respect to this common customer group would allow the platform to leverage its market power from one service to another rather easily.

Weak substitutes may also share a significant degree of customer overlap. Such overlap may be less pronounced than in the case of complements, however, it can nevertheless be very considerable in practice. This can be observed in the case of Whatsapp and Instagram, which were qualified as weak substitutes when acquired by Facebook and can be said to currently all form part of a data-sharing bundle where the customer data generated on one of these platforms is shared with the rest. Finally, a functional relation of unrelated products may also display a less pronounced customer overlap than complement, however, be quite significant nonetheless. For example, Uber and UberEats facilitate two completely different interactions, however, they share a great deal of customer overlap with respect to consumers.

Following this stage, it is important to assess to what extent the respective platform services or interactions are two or multisided. The reason for this check is that the tying or bundling of two sided interactions, which share a great degree of customer overlap, are more effective for market power leveraging than the tying of bundling of single sided products or services. This is primarily due to the indirect network effects at play in the case of two or multisided interactions that may enable a mutually reinforcing relation on the respective interactions as well as between the tied or bundled interactions. For example, when PayPal was tied to Ebay after its acquisition this action benefited the growth of both platforms. Using PayPal made purchases on Ebay safe and more consumer friendly which in turn made Ebay more popular. At the same time as more customers joined Ebay the bigger PayPal became by virtue of the tie, which in turn made it also a more popular payment platform even outside the scope of Ebay that was eventually also implemented by other platforms as well. This example shows that the tying or bundling may not only allow the respective platform to leverage its market power from one interaction to another but also to increase its market power as such. Assessing the degree to which a platform service of interaction is two or multisided requires looking at the nature and intensity of the indirect network effects at play between the separate

customers served by it. Where such effects are pronounced and are mutually positive with respect to the involved customer group(s) the respective potential of a foreclosure effect will be higher.

Expansion strategies that display the above characteristics can be said to qualify a potentially abusive tying or bundling practice in the sense of art. 102 TFEU, at least in a *prima facie* form. With the above in mind it can be said that the framework of tying and bundling under art. 102 TFEU is quite suitable for distinguishing between legitimate and anti-competitive expansion strategies. The main reason behind this suitability stems from the fact that platforms that are expanding will commonly try their best to ensure that their newly added service or interaction (on the initial platform or a new one) is utilized by at least one of their existing customer groups. In practice, this will inevitably mean applying some form of pressure on the freedom of choice of such respective customer groups. Where such pressure is sufficient to be considered a form of coercion such strategies could be analyzed under the framework of tying and bundling abuses and condemned only when producing competitive harm. By contrast where the efforts made by the respective platform leave sufficient room for the respective platform customer groups to opt for competing options for the tied or bundled interaction these will commonly be harmless and also fall outside the scope of the tying and bundling framework due to a lack of coercion. Accordingly, by observing whether the respective platform implements its expansion through coercive leveraging actions, the tying and bundling framework under art. 102 TFEU can serve as a useful filter for distinguishing legitimate expansion strategies from anti-competitive. Furthermore, since the shift to an effects based approach in tying and bundling cases in *Microsoft*, there is also a reduced risk of erroneous qualifications of abuse in such cases. This holds true also in the case of multisided platforms in principle, as the Commission appears to have taken into account the multisided aspects of Microsoft's products when assessing the anti-competitive effects of its practices. Accordingly, to the extent that a similar and perhaps more elaborate analysis of competitive harm is undertaken, wrongful qualifications of expansion strategies as abusive tying and bundling practice would be avoided.

Admittedly, anti-competitive expansion strategies could also be achieved through other means of exclusionary behavior as seen in the case of *Google Shopping* where Google's expansion or entrance to the market of comparison shopping services was coupled with exclusionary behavior in the market of general search. Nevertheless, expansions that entail disfavoring competitors are likely to be met with more apprehension by enforcement authorities and thus less likely to be implemented in practice. For example, the removal of parental control apps from Apple's Apps Store soon after Apple launched its own parental control apps was broadly criticized for being pursued due to potentially anti-competitive motives. Accordingly, strategies targeted

at the decision making process of the platform customer groups are more likely to be implemented in such instances, as they may achieve the same outcome, namely getting platform customers to use more than one platform service of interaction in tandem, but may appear less concerning the eyes of enforcement authorities. Therefore, the current framework of tying and bundling under art. 102 TFEU would be suitable for distinguishing legitimate expansion strategies from anti-competitive ones, at least as an initial mechanism for review.

7.1.4 Sub-question 4

How can abusive pricing practices by online platforms be assessed under art. 102 TFEU in light of their inherent reliance on unconventional price settings resulting from their multisided nature?

This sub-question is addressed in chapter 5 of this dissertation which focuses on the identification of abusive pricing practices by online platforms. The selected abuses for this chapter consist of predatory, excessive and discriminatory pricing which represent the main three forms of competitive harm that can be caused by the pricing strategies of dominant undertakings. Accordingly, the insights gained by the research in this chapter extend to many of the remaining price-related abuses that are not addressed as these share a great deal of communalities in terms of the theory of harm they address and the legal and economic tests they employ.

The assessment of the pricing practices of online platforms in the context of abuse of dominance cases will require overcoming several complexities associated with the distinct commercial reality of these actors that stem to a large extent from their multisided nature. In practice, overcoming these complexities will require adapting the analysis of the various tests and benchmarks used for the purpose of establishing compliance with art. 102 TFEU to fit this specific legal and economic context. The extent of these adjustments will vary across the different types of price related abuses depending on the theory of harm such abuses seek to tackle and prevent from materializing or persisting. This is because the differences in the theories of harm addressed by the various types of price-related abuses often require approaching the price setting of the concerned undertaking from different perspectives and assess their permissiveness with the help of different benchmarks. Nevertheless, some common ground can be found with respect to the adjustments that need to be made in the case of online platforms.

First, it is important to acknowledge that multisided online platforms are in essence a type of multi-product company. As multi product companies create and market a range of different products (or services) so do platforms when these facilitate multiple matchmaking interactions. Accordingly,

when defining the relevant market in each case thought must be given to the question of whether such a market should be defined with respect to the entire set of interactions or rather for each interaction on a standalone basis. The decision taken on this matter will significantly impact the scope and substance of the legal and economic analysis in each case. Second, the fact that platforms, due to their multisided nature, serve several separate customer groups means they may possess diverging degrees of market power with respect to such customer groups. This in turn means that platforms may have the ability and perhaps even the incentive to abuse their dominance only with respect to some of these groups. Such abuses can concern practices which inflict harm upon the competitors of the respective platform as well as to its own various customer groups. This relates to the third common point for adjustment which requires acknowledging that although both the pricing level and pricing structure of online platforms need to be taken into account in the scope of analysis, the manner in which this should be done depends greatly on whether the potential harm is caused to the platform competitors or customers. The implementation of these three common points together with more specific factors that require attention will entail the following.

A. Predatory pricing

In the case of predatory pricing, the theory of harm or the competitive harm that is expected to manifest is that the competitors of the concerned dominant platform are forced out of the market by its loss making pricing that such competitors are not capable of sustaining. In order to assess whether the pricing practices of the concerned platform are indeed capable of producing such an effect several steps need to be taken. First, it is important to establish the nature of competition between the concerned platform and its (actual and potential) competitors. This step is indispensable in cases where the concerned platform is multisided, meaning it facilitates multiple interactions. Accordingly, at this stage it is important to establish whether competition between the concerned platform and its potentially harmed competitors occurs with respect to each of the interactions separately or to the entire range of interactions offered by it as a whole. The decision taken in this regard determines how the relevant market in the respective case is defined. If competition is considered to take place across the individual interactions of the concerned platform with other players offering similar service or interaction, then the relevant market that needs to be defined is primarily that of the interaction with respect to which the concerns of predation have been identified. By contrast, if competition occurs with respect to the entire range of interactions offered by the concerned platform the relevant market that will have to be defined will concern the platform as a whole. This in turn will determine how dominance in each case has to be established and how the assessment of the price settings of the respective platform needs to be performed. Accordingly, when the relevant market in

a case concerning a multisided platform is defined for the entire platform interaction range, dominance will have to be established with respect to such a market which will consist of players that offer a similar range of interactions. The assessment of predation would then be analyzed based on the entire cost and profit structure of the platform so as to evaluate whether competitors offering a similar range of interactions could viably maintain similar price settings.

The division of costs and revenues across the different interactions in such cases is not addressed meaning that the evaluation takes into account the possibility that such competitors, as well as the concerned platform, are able to shift costs and revenues across their various interactions. When competition is found to occur with regard to each individual interaction separately, the relevant market(s) in such cases would have to be defined with regard to such individual interactions followed by a corresponding approach for establishing dominance. The assessment of predation in such cases would then require looking into the costs and revenues associated with each of the individual interactions separately. Such assessment then would also require an overall costs and revenues of the concerned platform. This extension is needed to ensure that the concerned platform does not allocate the common costs associated with its multiple interactions so as to operate below cost with respect to one of them and maintain a price setting that cannot be viably sustained by competing platforms that offer a single interaction. When the assessment of individual interactions is performing it is important that the calculation of costs and profits covers all the costs and profits associated with serving such an interaction to the customer groups it brings together. For example, the hotel room reservation interaction on Booking.com is served to both consumers and hotel owners. Therefore, a predation analysis with respect to such an individual interaction should take into account the costs involved in serving both these customer groups as well as the prices charged from them by Booking.com.

In addition to changing the approach of the legal assessment to the reality of platforms it is also important that the corresponding economic tools and benchmarks are suitable for their cost structure. In this regard current EU practice, established in Akzo, indicates that prices that are not high enough to cover the average variable costs (AVC) of a product or service are presumed to have such an effect and solely serve a predatory purpose. Prices above this level but below average total costs (ATC) of a product or service can be considered suspicious but will only be abusive when supported by additional evidence of a predatory intent. Utilizing the test of predation based on these benchmarks may often not be suitable for dealing with online platforms. This is because online platforms will often have relatively high fixed costs and low variable costs as well as a great deal of common costs when these players offer multiple interactions on the same platform. Accordingly, it is important that the chosen assessment bench-

marks are suitable for establishing the predation potential of price settings that involve such cost structures. Such alternative benchmarks have indeed been mentioned in the Commission's guidance paper on the application of art. 102 TFEU where it was noted that the Commission may replace the use of the Akzo benchmarks with LRAIC and AAC. Therefore, it would appear that the existing tools and benchmarks of the Commission in this regard may be suitable for dealing with the cost structures of online platforms. What remains uncertain however is whether the legal presumptions attached to the findings based on the benchmarks approved by the CJEU in Akzo will also extend to the alternative benchmarks used by the Commission.

B. Excessive pricing

In the case of excessive pricing similar considerations concerning the market definition for the platform or its individual interactions as well as the price benchmarks used for the purpose of assessment will apply as in the case of predatory pricing. The approach to the assessment of the excessive and unfair character of the respective price under investigation will, however, differ due to the theory of harm covered by this abuse type, which is focused on the exploitation of the customers of the concerned platform. Therefore, in such cases it would be suggested that the price assessment of the concerned platform is done with respect to the individual customer group that is believed to be subject to excessive and unfair prices with regard to one of the platform interactions. Nevertheless, in the context of such an assessment, the costs and charges associated with the other customer groups that take part in the same interaction as the allegedly harmed customer group should also be considered. This is because the costs and profits associated with a platform interaction are commonly divided unequally across the customer groups served by such interaction in a manner that may not always appear to correspond to the economic value provided to them by the platform. For example, on hotel room booking platforms or online marketplaces it is common practice that the merchants and hotel owners are the only customer group charged for using the intermediary service facilitated by the platform. Such charges cover not only the platform costs associated with the participation of these hotel owners or merchants on the respective platform but also with the costs involved in attracting consumers to such platforms. This is because having many consumers using such platforms constitutes a great deal of the economic value provided to hotel owners and merchants by them, which in turn justifies charging these parties for the costs (in part or in full) involved in attracting consumers. The manner in which the costs and fees of individual interactions can be expected to be divided depends on the nature and intensity as well and the homing patterns of the respective customer groups interconnect by the platform interaction. These settings provide essentially an insight to the nature of the economic value provided by the platform to such customer groups and thus have been found to constitute important variables for the price setting of platforms.

Therefore, it is suggested that the assessment of potentially exploitative prices also takes such variables into account in the context of the analysis. Doing so in practice will entail introducing an additional step to the first prong of the test introduced by the CJEU in *United Brands*. Accordingly, after assessing whether the fees charged from a customer group exceeds the costs involved in serving it the interaction service, an additional step is implemented which looks at the costs and fees charged from other customer groups served by the same interaction. This second step of the assessment is then aimed at analyzing the nature and intensity of the (indirect) network effects among such customer groups as well as their respective homing patterns. This step is done in order to assess the scope of the interaction costs that can be expected to be covered by each of the customer groups in light of such settings. To the extent that the fees imposed by the platform exceed such costs the second prong of the United Brands test concerning the unfairness aspects of the fees can be performed with respect to such a margin of excessiveness. This second prong of the test can in principle be performed in a similar fashion to non-platform cases, however, it is important the use of comparators for this purpose is done with significant diligence. Accordingly, any use of comparative evidence concerning undertakings that offer similar services to those of the concerned platform should be limited to identical or highly similar market settings. This means that such comparisons would ideally be limited to other platform entities that operate similar cost structures, display similar (indirect) network effects among their customer groups, which also exhibit similar homing patterns as the customer groups of the concerned platform. This specific scope of such a comparison between the concerned dominant platform and other players offering comparable services or interaction is needed in order to be consistent as indicated by the CJEU in *Latvien Copyright*. When the evidence used in the second prong concerns the past or present practices of the concerned platform in the same relevant market or a related one it is important that the platforms' size (volume of its various customer groups) as well as the depth of its respective interactions are accounted for.

The economic value created by platforms is to a great extent determined by these factors. Accordingly, any discrepancies in the prices of the concerned platform across territories, across different points in times or across comparable services should be assessed in light of identified discrepancies in such factors. To the extent that the discrepancies in prices do not correspond with the identified discrepancies in the volume of members of the respective customer groups of the platform, the depth of the interaction(s) served to such customer groups and ratio of successful (profitable) interactions then such evidence can support a finding of abuse. When such factors correspond, however, evidence of price discrepancy will not be equally meaningful as a platform that has a larger customer base and more evolved interactions provides its customer de facto a higher economic value which would justify subjecting them to higher rents. This remains true also in

cases where the concerned platform manages to provide such high value at a lower cost compared to its competitors as efficiency should in principle be encouraged and rewarded, even in the case of dominant undertakings.

Finally, when the claim of excessive pricing is made by customer groups which are attracted by zero-priced offers to use the respective interaction of the concerned platform, such claims should not be dismissed due to such a setting which may misrepresent what factually occurs in practice. For example, consumers are said to be offered hotel room booking services free of charge, meaning these are attracted to the platform with a zero-price offer. The hotel owners on such platforms commonly pay a transaction fee of 15-30% for each room booked through the platform. Nevertheless, in practice such fees can be calculated in the hotel room prices and thus passed on (in full or in part) to consumers. Accordingly, if claims of excessive prices arise with regard to such fees members of both customer groups should be able to substantiate their claims in practice. Therefore, when situations occur where the pass-on of platform charges can occur, claims of excessive prices should be open to members of all the customer groups that utilize the interaction suspected of being excessively priced by the concerned platform.

C. Discriminatory pricing

In the case of discriminatory pricing, finding abuses by online platforms firstly requires acknowledging that the various services or interactions offered by the concerned platform may constitute separate transactions under art. 102 TFEU. Although multisided platforms may facilitate multiple interactions which essentially provide a similar operational function in the sense that they often enable transactions between consumers and commercial parties, such communality is not sufficient in order for such interactions to qualify as equivalent transactions in the sense of art. 102(c) TFEU. Therefore, the fact that platforms commonly attach different price tags to their various interactions should not be perceived as suspicious since such interactions will often not fall under the scope of this provision.

Secondly, when addressing a specific interaction which is priced differently with respect to the commercial customer group(s) of the platform it is important to see whether such price discrepancies occur between competing platform customers. This is because a platform may serve one and the same interaction to one of its commercial customer groups (consisting of heterogeneous members) based on a variable pricing menu. Accordingly, in such cases some members of a customer group may pay more than other members of the same group. Nevertheless, such discrepancies may not fall under the scope of art. 102(c) TFEU to the extent that they do not apply across competing members of the same customer group. In this regard it is important to assess the pricing rules of the concerned platform with respect to its interaction(s). Where the pricing rules entail a

calculation method that works along the lines of competition the outcome of price discrepancy would not entail a potential infringement of art. 102(c) TFEU. In practice this would occur when the differentiation applied for pricing rests on factors that also constitute important determinants of the competitive relationship between members of the same customer group. For example, Amazon marketplace charges merchants selling their goods on the marketplace different transaction fees depending on the goods they sell. This is in itself not problematic as merchants selling shoes do not compete directly with merchants selling consumer electronics. Accordingly, the different fees charged in such cases cannot be considered abusive since they do not concern competitors. In this regard *prima facie* concerns of abuse can only arise where the pricing rules consist of factors that do not effectively exclude the possibility that competing members of a platform customer group are charged different fees.

Thirdly, when cases displaying such *prima facie* signs of abuse the commercial value of the concerned platforms' interaction as an input for its commercial customers needs to be evaluated. This requires assessing what the proportion of the platform fees is from the total costs associated with the commercial activity of the respective platform customers. If the platform fees constitute an insignificant part of the total costs carried by the platform customer groups in their commercial practices, discrepancies in such fees even when applied to competitors are not likely to impact competition among them. Therefore, in such scenarios, it is less likely that dissimilar pricing will lead to a finding of abuses as the CJEU noted in *MEO* the discrimination as such is not sufficient to establish an infringement. By contrast if the platform fees constitute an important share of the total costs carried by the platform customers in their commercial practices any price discrepancies should be further assessed with regard to their potential effect on competition. In this final stage of the assessment concerning anticompetitive effects, such effects should be assessed in the respective markets where the platform customers utilize the platform interaction as an input. For example, where merchants use an online marketplace as a sales channel, the effect on competition should firstly be assessed with respect to competition among the competing merchants on the platform. Alternatively, where merchants use a platform as an advertisement channel such as a price comparison site, the impact on competition should be assessed with regard to the market for which such advertisement is intended outside of the platform. In both cases, the greater the discrepancy in prices charged by the concerned platform, the greater the chance that an impact on competition resulting from it can be established, and with it a finding of abuse.

D. Overall applicability of Art. 102 TFEU to price related abuses

The findings concerning the recommended adjustments that would be required in order to adequately bring potentially abusive pricing practices

of online platforms under the scope of art. 102 TFEU indicate that this provision is overall suitable for this purpose. From a formal perspective, nothing in the wording of art. 102 TFEU, as such, prevents the effective application of this provision to the potentially abusive pricing practices of platforms. Although all three price-related abuses are specifically mentioned in art. 102 TFEU the legal tests developed for reaching such findings have been developed in practice. Therefore, the adjustments required in the context of online platforms do not necessitate any formal changes in the wording of this provision but rather to its implementation in practice.

When addressing the current frameworks and corresponding legal tests used for establishing the various forms of price-related abuses in the case of online platforms it can be said that such frameworks are similarly suitable to accommodate the unconventional pricing practices of online platforms. Although the multisided character and unconventional pricing practices of online platforms were not foreseen by the current frameworks of price related abuses at the time when their respective legal tests were introduced, the manner in which such tests operate in practice leave significant room for taking into account new economic insights. The legal tests developed for the price related abuses covered by this dissertation (as well as those not addressed) entail a set of criteria with respect to which the Commission or NCA (or private claimants) carry their burden of proof. The manner in which the burden of proof is discharged in such cases is, however, often form free. Accordingly, the Commission or NCA are free to make use of any kind of factual or economic, direct or indirect evidence for the purpose of sustaining their finding of abuse. It is only at this stage of the application of such frameworks of abuse that the difficulties associated with the multisided character of online platforms and their corresponding unconventional practices arise and thus require special attention.

In the case of predatory pricing such difficulties concern the manner in which the assessment of predation is approached and the cost benchmarks that are selected for the purpose of analysis. These difficulties equally arise in the case of excessive pricing. Finally, in the case of discriminatory pricing the difficulties associated with platforms concern primarily the approach taken for the assessment of discrimination. All such difficulties concern aspects of the analysis with regard to which both the Commission and NCA have significant discretion as these form part of the complex economic assessment these actors may perform which is only subject to limited review (and guidance) by EU Courts. Therefore, it can be said that the current frameworks of price related abuses under art. 102 TFEU are capable of accommodating the multisided character of online platforms and their corresponding unconventional price setting to the extent the Commission or NCAs are willing to implement the economic insights associated with such special circumstances in the context of their assessment of abuse.

7.1.5 Sub-question 5

How does the multisided nature of online platforms need to be accounted for when making remedy design choices for price and non-price related abuses of dominance and does the European Commission have the legal tools to design effective and proportionate remedies in such cases?

This fifth and last sub-question of the research is addressed in chapter 6 which deals with the topic of remedy design in the case of the price related abuses covered in chapter 5 as well as in the case of abusive tying and bundling practices as covered in chapter 4.

Chapters 4 and 5 which deal with potential price and non-price related abuses in the case of online platforms provide meaningful insights with regard to the manner in which such practices can manifest and the competitive concerns they raise. Such insights are not only relevant for the finding of abusive behavior by online platforms but also for remedying it as remedies often entail in practice imposing the mirror image of the abusive behavior on the concerned undertaking. Therefore, the platform specific considerations relating to their multisided nature that were taken into account for the purpose of adjusting the respective abuse frameworks under art. 102 TFEU must also be taken into account at the phase of remedy design.

These abuse specific insights provide guidance on how to tackle the fundamental factors that dominant online platforms are likely to attempt and impact in the context of their anti-competitive practices which would allow them to obtain a competitive advantage over their competitors and make use of opportunities that would otherwise not be possible in competitive markets. These factors, stemming from the multisided nature of platforms, concern the indirect network effects on or across platforms owned by the concerned undertaking and the single or multi homing patterns of the platform customer groups. The role of indirect network effects in the context of online platforms cannot be overstated as it constitutes one of the core factors which is inherent to their existence. In the context of competition, it is precisely the presence of indirect network effects between the various platform customer groups that is responsible for the positive feedback loop on or across platforms, which facilitates their respective growth. Therefore, a platform that succeeds in amplifying the indirect network effects between its customer groups will significantly increase its growth potential with respect to the interactions where such amplification occurs.

The homing patterns (i.e. single or multi-homing) of the platform customer groups determine the intensity of competition experienced by online platforms with respect to such customers and as such their ability to obtain more market power and utilize it in their own interest, at times to the detriment

of others. Therefore, by implementing strategies which impact the homing decisions of their customer groups, platforms are able to influence the scope of competition they experience with regard to their respective customer groups. Accordingly, given the importance of such factors it can only be expected that the anti-competitive practices of online platforms will target them in practice so as to achieve the most beneficial settings. This is particularly so given that a great synergy exists between the two factors, which, if managed properly, can give a significant competitive advantage to the concerned platform. This synergy can, if left unattended, lead to market tipping in favor of the concerned platform. Such an outcome has been acknowledged to be highly detrimental for competition and extremely difficult to remedy by the Commission or NCAs. Consequently, at the remedies phase it is principal that such factors are also tackled to the extent that these are influenced by the anti-competitive practices of the concerned platform. Failing to do so in practice may render the respective remedies ineffective as the growth of the concerned platform triggered by the changes in such factors will not be brought to a halt. This would mean that the (competitive) harm created by the concerned platforms' abusive behavior may persist even long after such prohibited practices have been abandoned, and depending on the market considerations in each case, may lead to market tipping. This in turn would mean that remedies that fail to account for such factors will unlikely be capable of attaining their threefold policy of objective which entails: bringing the infringement to an end, preventing its repetition and restoring or reestablishing the state of competition harmed by the abuse.

The manner in which such factors must be taken into account when remedying the various price and non-price related abuses explored in chapters 4 and 5 will vary depending on the competitive harm these can create. Tackling such aspects will at times be resolved by similar means implemented in non-platform cases, however, in most cases it will require a more elaborate use of the remedies available to the Commission under Regulation 1/2003 (or NCA under their respective frameworks).

A. Remedy considerations in tying cases

In the case of tying and bundling practices, it was shown in chapter 4 that such abuses can manifest on a single platform or alternatively across two or more platforms owned by the same undertaking. The tying and bundling practices will predominantly (but not exclusively) be applied with respect to the customer group of the platform consisting of consumers as these often constitute the common customer group for multiple interactions on a single platform or across multiple ones. When remedying such practices the first step would entail following the common practice in non-platform settings which entails requiring the concerned undertaking to remove the conditionality aspect (technical or contractual) that ties or bundles two or more of its products or services.

The second step, where the multisided nature of platforms needs to be accounted for, would require zooming into the effects created by the abusive practices on the indirect network effects on or across the concerned platforms and the homing patterns of the customer groups that have been subject to the tying and bundling practices. At this second step, to the extent that such factors were impacted, the imposed remedy should be designed in a manner that halts their shift in favor of the concerned platform and restores their settings to situation prior to the abuse or at the very least create the possibility for such settings to be reset through competition on the merits. Accordingly, if the tying or bundling practices of the concerned platform amplified the network effects at play between its respective customer groups, the imposed remedy should ensure that positive feedback loop caused by such effects, which will fuel the growth of the platform, is brought to a halt. The manner in such a result will be achieved will depend on the nature of the tying and bundling practices (technical, contractual or a combination thereof), the type of tying and bundling (on-platform or cross-platform) as well as the functional relation between the interactions or platforms tied and bundled (complements, weak substitutes, non-related services). This is because these variables, as discussed in chapters 4 and 6, determine to a great extent the impact of the concerned platforms' tying and bundling practices on the indirect network effects at play. Accordingly, these variables will also determine the kind of intervention required at the remedy phase.

Similarly, when the tying or bundling practice caused a shift in the homing patterns of the platform customers in favor of the concerned platform it is important that such shift is reversed as much as possible. This would occur if the concerned platform caused (through its abusive practice) a shift of such patterns from multisided multi-homing, to a competitive bottleneck setting (single homing by some customer groups and multi-homing by others) or the even more favorable multisided single homing. Reversing such shifts at the remedy stage will similarly depend on the nature of the tying and bundling practices, the type of tying and bundling as well as the functional relation between the interactions or platforms tied and bundled. This is because such variables determine the manner in which such a shift is achieved and the extent to which it may persist or progress in the future.

Finally, when the tying and bundling practices concern the customer group of the platform consisting of consumers, it is important to observe whether such practices helped form a consumer bias in favor of the concerned platform. The presence of such a development would mean in practice that even once the conditionality aspect attached to the concerned platforms' interactions is removed, consumers are likely to persist with a behavior similar to that pursued by the abusive practices. This in turn means that the impact caused by the tying or bundling practices on the indirect network effects at play and the homing patterns of the platform customer groups

may continue to persist even once the prohibited practices have ended. As mentioned, in the long run, this can lead to market tipping in favor of the concerned platform which is extremely difficult to remedy ex-post. Consequently, in the event that such consumer bias has been formed it will likely be required that the Commission (or NCA) implements more far-reaching and elaborate measures to weaken such bias by making consumers actively reconsider their default choices and behavior formed by the abusive practices of the concerned platform.

B. Remedy considerations in the case of price-related abuses

The potential impact of price related abuses on the indirect network effects at play and the homing patterns of the platform customer groups can at times be similar to that of tying and bundling cases. The extent of such impact as well as the potential of creating a consumer bias through such abuses will vary based on the respective abuse. The overall approach to remedies will therefore consist of the previously mentioned two main steps. In the first step the abusive aspect of the pricing strategy needs to be removed. In the case of predatory pricing this entails demanding that the price levels or the respective interactions are raised above predatory levels. In the case of excessive pricing this would entail imposing a decrease of price for the respective interaction to a level that better corresponds with the economic value it offers to the customer groups using it. In the case of discriminatory pricing this first step would entail requiring the concerned platform to minimize the price discrepancy applied by it with respect to one or more of its interactions so that it does not impact competition between its customers. The second step, as previously mentioned, will focus on tackling the impact of the abusive practice on the indirect network effect at play and the homing patterns of the respective customer groups affected by the abuse. To the extent that a consumer bias was formed due to the abusive pricing practices of the respective platform, such bias then needs to be tackled as to prevent the (competitive) harm it generates from persisting. As in the case of tying and bundling practices, the nature and degree of the legal intervention at the remedy phase will depend on the impact caused by the abusive practices on such factors.

C. The legal tools of the Commission

Under the current framework of EU competition law, the legal tools available to the Commission for the purpose of imposing remedies in the case of infringements are found in Regulation 1/2003. In this regard, art. 7 and 8 of the Regulation constitute the most important provisions. From a theoretical perspective, the combination of these two provisions would appear to be suitable for coming up with proportionate and effective remedies in the case of online platforms. Art. 7 allows for the implementation of behavioral, as well as structural remedies, which would essentially allow achieving the

tri-fold objective of remedies in most cases. Art. 8 allows for the implementation of interim measures that help prevent the deterioration of competition to non-remediable states in the course of investigations pursued by the Commission. Accordingly, from a formal perspective it would appear that such provisions enable the Commission to take the necessary measures it would need when dealing with platforms. However, when looking at previous practice of the Commission it soon becomes clear that this theoretical potential has been constrained by past choices.

Under art. 7 structural remedies may indeed be theoretically possible, however, that is only under special circumstances where such remedies are more effective and less burdensome than behavioral ones. Accordingly, if the abusive practices of the concerned dominant platform need to be tackled through structural measures such an option is only possible to the extent that the Commission can show that behavioral remedies would not be equally suitable for such purpose. Doing so in practice will be difficult as behavioral remedies can at times indeed produce similar results. The difficulty is, however, that the effectiveness of behavioral remedies cannot be assessed ex-ante and once they are imposed these cannot be switched for structural ones if they do not deliver the desired outcome. Accordingly, if the competitive harm caused by the abusive behavior of the platform persists after the concerned platform ceases its abusive behavior, due to shift in the homing patterns of its customers for example, there is not much that can be done further in terms of remedies. In such cases, it could then occur that the market may tip in favor of the concerned platform after the abusive behavior was terminated in accordance with the Commission's behavioral remedy measures. Nevertheless, such uncertainty with regard to the effectiveness of behavioral remedies is not sufficient in order to make the choice for structural remedies less cumbersome as can be observed by the previous practice of the Commission that consists almost entirely of behavioral remedies. Therefore, implementing structural remedies in platform cases so as to prevent the harm caused by the abuse from persisting and the affected markets from tipping in favor of the concerned platform will require some form of *prima facie* evidence that behavioral measures in such cases may not deliver the desired outcomes. Producing such evidence in practice is theoretically possible however it would require a more strategic use of interim measures under art. 8 of Regulation 1/2003.

The use of interim measures in platform cases where the abusive behavior of the concerned platform shows signs of the above mentioned developments with regard to the indirect network effects homing patterns that may lead to market tipping may prove to be very valuable for effective enforcement. Firstly, such measures would enable the Commission (or NCAs) to intervene in the early stages of such developments which increases the chances that these can be effectively addressed at the phase of the final decision which commonly takes place at a significantly later point in time.

Secondly, the implementation of behavioral remedies at the interim measure phase and their review up to the moment of the final decision on abuse can provide valuable guidance on the scope and nature of the final remedy that needs to be imposed. Accordingly, if the behavioral remedies implemented in the context of interim measures appear to produce the desired effects from the perspective of competition policy these can be maintained to a large extent also at the phase of the final decision on abuse. By contrast if such remedies do not appear to slow down the competitive harm caused by the concerned platform and the risk of market tipping continues to increase such an outcome can serve as evidence supporting the use of structural measures at the stage of the final decision on abuse.

Despite the potential benefits associated with such strategic use of interim measures from a theoretical perspective it is quite questionable to what extent the Commission would be able and willing to do so in practice. On the one hand, recent statements made by the Commission give the impression that there is a growing momentum for the use of interim measures in the case of digital markets in general and even more so in the specific case of online platforms. On the other hand, it is not clear how such intentions will transform into actions. The use of interim remedies under art. 8 of Regulation requires evidence of a prima facie infringement which may cause irreparable harm to competition. Producing evidence that the potentially abusive practices of the concerned platform are capable of producing irreparable harm to competition will constitute a significant impediment for using interim measures. This is due to the fact that adducing such evidence would entail essentially providing evidence that if the practices of the concerned platform are not tackled at an early stage, these will lead to market tipping in its favor which can hardly if at all be remedied at the stage of the final decisions. While this could theoretically be possible to prove, there are currently no available economic or legal tools which can be used for this purpose. Accordingly, even assuming that the concrete risk of market tipping would suffice to meet the criterion of irreparable harm to competition needed for using interim measures, adducing such evidence will firstly require coming up with specific tools capable of measuring such risk.

An alternative approach to achieve the same effect as the strategic use of interim measures would be introducing flexible remedies at the stage of the final decisions of abuse. Such remedies, currently discussed in the context or merger control, would entail imposing remedies consisting of multiple layers of legal interventions which may be triggered according to the manner in which market conditions in a respective case evolve. Such remedies could consist of behavioral measures which would entail the first layer of intervention that would then intensify to the point where structural measures are triggered if the harm caused by the abusive practices persists. In this sense, a comparable combination of behavioral and structural reme-

dies could be highly effective in tackling market tipping which cannot be appraised with certainty *ex- ante*. Furthermore, since the legal intervention imposed by such remedies would work based on a gradual scale it would in principle be considered compatible to a great extent with the requirements of art. 7 of Regulation 1/2003 as structural measure would only be initiated once the behavioral aspects of the remedies have failed to achieve the desired outcome. Thus, implementing structural measures would be made possible for the cases which are required and due to a preliminary phase consisting of behavioral remedies will more likely be considered proportionate under the scope of art. 7.

The implementation of this possibility will however not be free of challenges. Firstly, it would require the Commission to adopt a practice it has never pursued until now which should not be underestimated. Secondly, the implementation of such remedies may give rise to legal certainty concerns as the concerned platforms may not always have sufficient clarity concerning the circumstances that may trigger the initiation of more intrusive measures in each case. This is linked to the third main challenge, which concerns the definition of well-defined market scenarios for each of the remedial steps included in the scope of flexible remedies. Accordingly, when imposing such remedies it is paramount that the Commission defines clear, transparent and measurable conditions attached to the various behavioral and structural measures included in the remedy. Doing so would provide more legal certainty for the concerned platform as well enable EU Courts to better review such measures when contested. By providing clearly defined market conditions attached to each of the behavioral and structural remedial layers, such remedies could be better evaluated with respect to their effectiveness and proportionality. Consequently, when designing such remedies it is imperative that the Commission acknowledges these legal boundaries for remedies for each of the respective remedial layers as well as to their combination as a whole. Despite the difficulties associated with flexible remedies such an option would appear to provide a concrete effective solution within the boundaries of the existing legal framework that would allow the Commission to accommodate the challenges associated with the multisided nature of online platforms at the remedy design phase.

Until the time comes that the Commission starts making a more strategic use of interim measures or introduces flexible remedies it can be expected that the current framework of EU competition law will struggle with implementing effective and proportionate measures for abuses of dominance by online platforms, which adequately tackle the challenges stemming from their multisided nature. In this regard, it can be said that the recently proposed DMA, if implemented, may assist in this respect to a limited extent. Accordingly some of the obligations included in art. 5 and 6 of the DMA cover several forms of structural remedies that would unlikely be implemented as a first choice remedy under art. 7 of Regulation 1/2003.

Consequently in some cases the DMA would allow imposing measures which would otherwise not be possible following a finding of abuse. Furthermore, to the extent that the behavioral and structural obligations included in the DMA fail to achieve the objectives of the DMA, which is ensuring the contestability of markets, this can serve as supporting evidence for more far-reaching remedies with respect to abuses of dominance by platforms that fall under the scope of the DMA. While such an addition to the toolkit of the Commission would certainly be welcome, its added value in practice should not be overstated. The impact of this synergy between competition law remedies and the DMA will predominantly be relevant to cases concerning cross-platform tying as the competitive concerns associated with the other forms of abuse in this dissertation have not been included in the DMA. Furthermore, the scope of application of the DMA is restricted to a predefined selection of platform categories that must also fulfill very high thresholds with respect to their absolute size and turnover. In practice this means that the scope of cases in which the DMA could be of assistance for the purpose of remedy design for abuses of dominance cases under art. 102 TFEU will be quite restricted.

With these findings in mind, it can be concluded that the current framework of EU competition law may provide the Commission to a large extent with the tools it will need in order to design effective and proportionate remedies in the case of online platforms. However, in order to make full use of such tools the Commission must break free of its previous practice and attempt to find more dynamic solutions which are better suited to deal with uncertain market developments. Doing so would not only improve enforcement in the case of platforms but will also benefit the process of remedy design in the cases of non-platform undertakings where similar difficulties may sometimes arise.

7.2 Answer to the main research question and final considerations

The answers to the sub-questions of the research discussed above provide the fundamental insights needed in order to provide an answer to this dissertation's main research question:

To what extent can the current framework of EU antitrust law, and in particular art. 102 TFEU, account for the multisided nature of online platforms and accommodate an application capable of attaining a similar level of enforceability as in non-platform market settings?

In light of the many doubts expressed over the past few years in academia and practice about the ability of the current legal framework of EU antitrust law (i.e. art. 101 and 102 TFEU) to apply to online platforms, it is perhaps best that the answer to this research question starts with the positive note

that the current framework is indeed up to this task. Doing so in practice will by no means be an easy task, however, from a legal formalistic perspective there is no reason why this should not be possible. In essence, applying the current framework of EU competition law and in particular art. 102 TFEU to online platforms requires incorporating the distinguishing characteristics stemming from their multisided nature throughout the entire process of application.

Incorporating such characteristics requires first and foremost extending, or at least considering extending, the legal and economic analysis in each step of the application process to more than one market. As multisided online platforms compete with respect to the various customer groups they bring on board, their respective market position, (anti-competitive) commercial practices and, when needed, corresponding remedies should also be assessed and designed in such a context. Adapting current practice to such context with regard to cases addressed under art. 102 TFEU would entail multiple adjustments. Firstly, it would mean that the outcome of the market definition process might be that multiple relevant markets need to be defined with respect to the concerned platform or one of the services it facilitates. This would also entail that testing interchangeability and market power may have to be done across multiple markets in parallel. Secondly, when assessing potentially abusive behavior, the assessment thereof and the (pro-and) anti-competitive effects it may produce requires looking at such effects across more than one market. Thirdly, in the event that infringements are indeed established, the corresponding remedies should be designed in so as to also apply, if needed, across multiple markets.

When implementing such adjustments, additional, more specific, characteristics will need to be incorporated in the corresponding steps of the application process. The most important ones in this regard would be: the (indirect) network effects displayed by concerned platforms' customer groups, the homing patters of the concerned platforms' customer groups and the use of a skewed pricing structure. These characteristics, which are inherent to online platforms, will significantly impact the legal and economic assessment at each step of the application process.

In the context of the market definition the (indirect) network effects and the homing patterns displayed by concerned platforms' customer groups will determine to a great extent the number of markets that need to be defined for the concerned platform or one of the services it facilitated. In the context of the assessment of non-price related abuses such as tying and bundling practices these characteristics will determine the anti-competitive potential and scope of competitive harm created by such practices. Similarly, when dealing with price-related abuses these characteristics together with the use of skewed pricing structures will help determine anti-competitive potential and scope of exclusionary and exploitative harm caused by the concerned

platforms' price settings. Finally, at the stage of remedies all three characteristics will determine which markets the remedies should address, the nature of the harm that needs to be halted and restored and the manner in which the concerned platform should amend its abusive commercial practices in order to be in compliance with the law.

Incorporating all of these platform characteristics in the application process of art. 102 TFEU will undoubtedly be challenging, however, it will mostly concern adjusting the (economic) tools used by the Commission (or NCAs) in order to discharge their burden of proof with regard to each of the legal steps in the application process. In the case of the market definition, it is not the requirement to undertake this process as such which constitutes the main challenge in the case of platforms but rather the manner in the process is approached, how substitutability is assessed and how the SSNIP test cannot work in zero-price settings. Similarly, in the case of tying and bundling abuses, the legal test developed by the CJEU is not in itself problematic. Instead, it is the ability to ensure an accurate identification of practices which resemble tying and the multi-market assessment of foreclosure effects, which is required for establishing an infringement, that constitute the main enforcement hurdles. In the case of price-related abuses the situation is similar, it is mainly the manner in which the price analyses are performed, the price benchmarks selected and the multi-market analysis of foreclosure which require caution.

To a great extent this is also visible at the phase of remedies, where the main difficulty related to the multisided nature of platforms is designing measures that are capable of tackling anti-competitive effects across multiple markets simultaneously. Admittedly, however, in this latter case it can also be argued to some extent that the legal requirements and boundaries imposed on remedy design choices may be amplified in the case of online platforms. This is most noticeable in the case of interim measures that require proof of irreparable harm to competition, which is far more difficult to prove in dynamic market conditions as those often associated with online platforms. Nevertheless, this difficulty also partly stems from the lack of (economic) tools suitable for assessing market tipping which would otherwise fulfill this legal requirement, as it would represent the equivalent of irreparable competitive harm in the context of platform markets. Similarly, when it comes to the justification possibilities under art. 101 and 102 TFEU it can be argued that the Commission's guidelines and the CJEU's interpretation of these modalities make them less feasible in the context of platforms. However, this difficulty may at times be resolved by the manner in which the relevant market is defined as well as by the manner in which such efficiencies are presented and explained by the concerned parties.

In this regard it can therefore be concluded that the current framework of EU antitrust law and in particular art. 102 TFEU is to a great extent capable of accommodating the distinguishing characteristics of online platforms in a manner that would attain similar outcomes as in non-platform market settings. Making use of this capability depends, however, to a great extent on the willingness of the Commission (or NCA) to incorporate such characteristics in the (economic) tools and methods used to discharge its burden of proof in such cases. These adjustments will therefore mostly form part of the complex economic assessment the Commission is expected to perform in most competition cases. This in turn means that adapting the current framework to the reality of online platforms will for the most part not require additional regulatory intervention or the revision of previous case law by the EU Courts. Accordingly, despite the substantive complexities associated with accommodating the multisided nature of online platforms in the current frame of EU competition law, the adjustments required for this purpose will entail relatively few formal legal hurdles. In this respect the recent proposal of the DMA will do relatively little to alleviate the challenges faced in the context of competition policy as its framework provides little guidance on how the deal with the multisided character of online platforms.

Instead, the DMA offers a way around some of the challenges experienced in the context of competition policy. The most evident examples in this regard are the avoidance of the market definition process and its replacement with predefined volume thresholds, and the ex-ante prohibition of various cross platform tying modalities. This approach may to some extent increase the feasibility of enforcement in the short term. However, the restricted scope of the DMA will limit its relevance in practice. Furthermore, to the extent the parties covered by it will contest the obligations imposed on them by the DMA the Commission and EU Courts will inevitably have to deal with the multisided character of the concerned online platforms in the context of such procedures. While the context of such cases may be slightly different, the legal and economic assessment required will inevitably entail looking into the state of competition in platform markets and the commercial reality of the online platforms active in them. Therefore many of the challenges faced in the context of competition policy will require resolving even in the presence of specific regulatory frameworks such as the DMA. What remains to be seen is whether these challenges will be tackled with the aim of resolving them or whether the Commission (or NCAs) will seek additional manners in order to avoid them all together.

Annex 1 – Legislation

- Commission Guidelines on the application of Article 81(3) of the Treaty (2004) OJ C 101/97
- Commission Guidelines on the method of setting fines imposed pursuant to Article 23(2)(a) of Regulation No 1/2003, (2006) OJ C 210/02
- Commission Guidance on the Commission's enforcement priorities in applying Article 82 of the EC Treaty to abusive exclusionary conduct by dominant undertakings (2009) OJ C 45/2
- Commission Guidelines on vertical restraints (2010) OJ C 130/1
- Commission Guidelines on the applicability of Article 101 of the Treaty on the Functioning of the European Union to horizontal co-operation agreements (2011) OJ C 11/1
- Commission Notice on the application of competition rules to access agreements in the telecommunication sector – framework, relevant markets and principles [1998] OJ C265/2
- Commission Notice on the definition of the relevant market for the purposes of Community competition law [1997] Official Journal C 372/5
- Commission Notice on remedies acceptable under Council Regulation (EC) No 139/2004 and under Commission Regulation (EC) No 802/2004 OJ C267/1
- Commission Proposal for a Regulation of the European Parliament and of the Council on contestable and fair markets in the digital sector (Digital Markets Act), COM(2020) 842 final.
- Commission Regulation (EU) No 330/2010 of 20 April 2010 on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of vertical agreements and concerted practices, OJ L 102/1
- Consolidated version of the Treaty on the Functioning of the European Union OJ C 326/ 47
- Council Regulation (EC) No 1/2003 of 16 December 2002 on the implementation of the rules on competition laid down in Articles 81 and 82 of the Treaty (Text with EEA relevance) OJ/L 1
- Council Regulation (EC) No 139/2004 of 20 January 2004 on the control of concentrations between undertakings OJ L 24/1
- Directive (EU) 2015/2366 of the European Parliament and the of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC, OJ L377/35.
- EEC Council Regulation No 17: First Regulation implementing Articles 85 and 86 of the Treaty (1962) OJ 13/ 3
- Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation) OJ L 119/1

Annex 2 – List of Cases

European Court of Justice

- Judgment of the Court of 13 July 1966 in Joined cases 56/64 and 58/64 *Consten and Grundig* [1966] ECLI:EU:C:1966:41
- Judgment of the Court of 14 July 1972 in Case 48/69 *ICI v Commission* [1972] ECLI:EU:C:1972:70
- Judgment of the Court of 6 March 1974 Joined cases 6 and 7/73, *Commercial Solvents v Commission* [1974] ECLI:EU:C:1974:18
- Judgment of the Court of 13 November 1975 Case 26/75, *General Motors Company v Commission* [1975] ECLI:EU:C:1975:150
- Judgment of the Court of 29 June 1978 in Case 77/77 *BP v Commission* [1978] ECLI:EU:C:1978:141
- Judgment of the Court of 14 February 1978 in Case 27/76, *United Brands Company v. Commission* [1979]ECLI:EU:C:1978:22
- Judgment of the Court of 13 February 1979 in Case C-85/76 *Hoffmann-La Roche v Commission* [1979] ECLI:EU:C:1979:36
- Order of the Court of 17 January 1980 in Case C 792/79R *Camera Care v Commission* [1980] ECLI:EU:C:1980:18
- Judgment of the Court of 9 November 1983 in Case 322/81 *NV Nederlandsche Banden Industrie Michelin v Commission* [1983] ECLI:EU:C:1983:313
- Judgment of the Court of 28 March 1985 in Case 298/83, *CICCE v Commission* [1985] ECLI:EU:C:1985:150
- Judgment of the Court of 3 October 1985 in Case 311/84 *CBEM v CLT* [1985] ECLI:EU:C:1985:394
- Judgment of the Court (Fifth Chamber) of 11 November 1986 in Case 226/84 *British Leyland Public Limited Company v Commission* [1987] ECLI:EU:C:1986:421
- Judgment of the Court (Fifth Chamber) of 19 April 1988 in Case C- 27/87 *SPRL Louis Erauw-Jaquery v La Hebignonne SC* [1988] ECLI:EU:C:1988:183
- Judgment of the Court of 11 April 1989 in Case 66/86, *Ahmed Saeed Flugreisen and Silver line Reisburo GmbH v Zentrale zur Bekampfung unlauteren Wettberbs e. V*. [1989] ECLI:EU:C:1989:140
- Judgment of the Court of 13 July 1989 in Joint Cases 110/88, 241/88, 242/88, *Lucazeau v SACEM* [1989] ECLI:EU:C:1989:326 and others
- Judgment of the Court of 13 July 1989 inCase C-395/87 *Ministere Public v Jean-Louis Tournier* [1989] ECLI:EU:C:1989:319
- Judgment of the Court of 3 July 1991 in Case C- 62/86 *AKZO v. Commission* [1991] ECLI:EU:C:1991:286
- Judgment of the Court of 27 September 1988 in Case C-89/85 *A. Ahlström Osakeyhtiö and others v Commission* [1993] ECLI:EU:C:1993:120
- Judgment of the Court of 6 April 1995 in Joined cases C-241/91 P and C-242/91 P *RTE and ITP v Commission* [1995] ECLI:EU:C:1995:98
- Judgment of the Court of 6 April 1995 in Case C-241/91 P *Magill* [1995] ECLI:EU:C:1995:98

- Order of the Court of 19 July 1995 in Case C-149/95 P(R) *Commission v Atlantic Container* [1995] ECLI:EU:C:1995:257
- Judgment of the Court of 30 June 1996 in Case C- 56/65 *Societe Technique Miniere v Maschinen Ulm* [1996] ECLI:EU:C:1966:38
- Judgment of the Court of 14 November 1996 in Case C-333/94P *Tetra Pak Internaional SA v Commission* [1996] ECLI:EU:C:1996:436
- Judgment of the Court of 26 November 1998 Case C-7/97 *Oscar Bronner v. Mediaprint* [1998] ECLI:EU:C:1998:569
- Judgment of the Court of 8 July 1999 in Case C-199/92 P *Huls v Commission* [1999] ECLI:EU:C:1999:358
- Judgment of the Court of 16 March 2000 in C-395/96 P *Compagnie Maritime Belge Transports and Others v Commission* [2000] ECLI:EU:C:2000:132
- Judgment of the Court of 29 March 2001 in Case C-163/99 *Portuguese Republic v Commission* [2001] ECLI:EU:C:2001:189
- Order of the Court of 11 April 2001 in Case C-471/00 P(R) *Commission v Cambridge Health Care* [2001] ECLI:EU:C:2001:218
- Judgment of the Court of 29 April 2004 in Case C-418/01 *IMS Health GmbH & Co. OHG v NDC Health GmbH & Co. KG*. [2004] ECLI:EU:C:2004:257
- Judgment of the Court of 15 March 2007 in Case C-95/04 P *British Airways plc v Commission* [2007] ECLI:EU:C:2007:166
- Judgment of the Court of 11 December 2008 in Case C-52/07 *Kanal 5 Ltd and TV 4 AB v Föreningen Svenska Tonsättares Internationella Musikbyrå (STIM) upa* [2008] ECLI:EU:C:2008:703
- Judgment of the Court of 20 November 2008 in Case C- 209/07 *Competition Authority v Beef Industry Department Society and Barry Brothers (Cargimore) Meats* [2008] ECLI:EU:C:2008:643
- Judgment of the Court of 16 Sptember 2008 in Joined Cases C-468/06 to C-478/06 *Sot. Lélos kai Sia EE and Others v GlaxoSmithKline AEVE Farmakeftikon Proïonton, formerly Glaxowellcome AEVE* [2008] ECLI:EU:C:2008:504
- Judgment of the Court of 4 June 2009 Case C-8/08 *T-Mobile Netherlands BV v Raad van bestuur van de Nederlandse Mededingingsautoriteit* [2009] ECLI:EU:C:2009:343
- Judgment of the Court of 25 March 2009 Case C-159/08 P *Isabella Scippacercola and Ioannis Trezakis v Commission* [2009] ECLI:EU:C:2009:188
- Judgment of the Court of 2 April 2009 Case C-202/07P, *France Telecom SA v Commission* [2009] ECLI:EU:C:2009:214
- Judgment of the Court of 17 February 2011 in Case C-52/09 *TeliaSonera Sverige* [2011] ECLI:EU:C:2011:83
- Judgment of the Court of 27 March 2012 in Case C-209/10 *Post Danmark* [2012] ECLI:EU:C:2012:172
- Judgment of the Court of 14 March 2013 in Case C-32/11 *Allianz Hungaria Biztosito Zrt and Others v Gazdasagi Versnyhivatal*, [2013] ECLI:EU:C:2013:160
- Judgment of the Court of 7 February 2013 in Case C-68/12 *Protimonopolný úrad Slovenskej republiky v Slovenská sporite a a.s.*, [2013] ECLI:EU:C:2013:71
- Judgment of the Court of 11 September 2014 in Case C-67/13 P *Grupement des Cartes Bancaires v Commission* [2014] ECLI:EU:C:2014:2204
- Judgment of the Court of 11 September 2014 in Case C-382/12 P *MasterCard Inc and Others v Commission* [2014] ECLI:EU:C:2014:2201
- Judgment of the Court of 22 October 2015 in Case C-194/14 P *AC-Treuhand AG v Commission* [2015] ECLI:EU:C:2015:717
- Judgment of the Court of 6 October 2015 in Case C-23/14 *Post Danmark* [2015] ECLI:EU:C:2015:651

- Judgment of the Court of 26 November 2015 in Case C-345/14 *SIA Maxima Latvija v Konkurences padome* [2015] ECLI:EU:C:2015:784
- Judgment of the Court of 21 January 2016 in Case C-74/14 *Eturas and others* [2016] ECLI:EU:C:2016:42
- Judgment of the Court of 6 September 2017 in Case C-413/14P *Intel v Commission* [2017] ECLI:EU:C:2017:63
- Judgment of the Court of 14 September 2017 in Case C-177/16 *Latvian Copyright* [2017] EU:C:2017:689
- Judgment of the Court of 20 December 2017 in Case C-434/15 *Asociación Profesional Élite Taxi V Uber Systems Spain SL* [2017] ECLI:EU:C:2017:981
- Judgment of the Court of 18 April 2018 in Case C-525/16 *MEO — Serviços de Comunicações e Multimédia SA v. Autoridade da Concorrência* [2018] ECLI:EU:C:2018:270
- Judgment of the Court of 25 November 2020 in Case C-372/19, *Belgische Vereniging van Auteurs, Componisten en Uitgevers CVBA (SABAM) v Weareone.World BVBA and Wecandance NV* [2020] ECLI:EU:C:2020:959

AG Opinions

- Opinion of AG Trstenjak of 11 September 2008 in Case C-52/07 *Kanal 5 Ltd and TV 4 AB v Föreningen Svenska Tonsättares Internationella Musikbyrå (STIM) upa* [2008] ECLI:EU:C:2008:491
- Opinion of AG Kokott of 19 February 2009 in Case C-8/08 *T-mobile Nethterlands BV and Others* [2009] ECLI:EU:C:2009:110
- Opinion of AG Wahl of 6 April 2017 in Case C-177/16 *Latvian Copyright* [2017] EU:C:2017:286
- Opinion of AG Szpunar of 11 May 2017 Case C-434/15 *Asociación Profesional Élite Taxi V Uber Systems Spain SL* [2017] ECLI:EU:C:2017:364
- Opinion of AG Wahl of 20 December 2017 in Case C-525/*16 MEO — Serviços de Comunicações e Multimédia SA v. Autoridade da Concorrência* [2017] ECLI:EU:C:2017:1020

General Court / Court of First instance

- Order of the Court of First Instance of 21 May 1990 in Case T-23/90 *Peugeot v Commission* [1990] ECLI:EU:T:1990:31
- Judgment of the Court of First Instance of 10 July 1990 in Case T-51/89 *Tetra Pak Rausing SA v Commission of the European Communities* [1990] ECLI:EU:T:1990:41
- Judgment of the Court of First Instance of 12 December 1991 in Case T-30/89 Hilti AG v Commission [1991] ECLI:EU:T:1991:70
- Judgment of the Court of First Instance of 24 January 1992 in Case T-44/90 *La Cinq v Commission* [1992] ECLI:EU:T:1992:5
- Judgment of the Court of First Instance of 6 October 1994 in Case T-83/91 *Tetra Pak International SA v Commission* [1994] ECLI:EU:T:1994:246
- Judgment of the Court of First Instance of 27 October 1994 in Case T-34/92 *Fiatagri v Commission* [1994] ECLI:EU:T:1994:258
- Judgment of the Court of First Instance of 19 June 1997 Case T-260/94 *Air Inter v Commission* [1994] ECLI:EU:T:1994:265
- Judgment of the Court of First Instance of 8 June 1995 in Case T-7/93 *Langnese-Iglo v Commission* [1995] ECLI:EU:T:1995:98
- Judgment of the Court of First Instance of 11 March 1999 in Case T-136/94 *Eurofer v. Commission* [1999] ECLI:EU:T:1999:45

- Judgment of the Court of First Instance of 7 October 1999 in Case T-228/97 *Irish Sugar v Commission* [1999] ECLI:EU:T:1999:246
- Judgment of the Court of First Instance of 15 March 2000 in Joined Cases T-25/95 *Cimenteries and Others* [2000] ECLI:EU:T:2000:77
- Judgment of the Court of First Instance of 26 October 2000 in Case T-41/96 *Bayer AG v Commission* [2000] ECLI:EU:T:2000:242
- Judgment of the Court of First Instance of 6 July 2000 in Case T-62/98 *Volkswagen v Commission* [2000] ECLI:EU:T:2000:180
- Order of the Court of First Instance of 10 March 2005 in Case T-184/01 R, *IMS Health Inc. v Commission* [2001] EU:T:2001:259
- Judgment of the Court of First Instance of 23 October 2003 in Case T-65/98 *Van den Bergh Foods v Commission* [2003] ECLI:EU:T:2003:281
- Judgment of the Court of First Instance of 17 December 2003 in Case T-219/99 *British Airways v Commission* [2003] ECLI:EU:T:2003:343
- Judgment of the Court of First Instance of 27 September 2006 in Case T-168/01 *GlaxoSmithKline Services Unlimited* [2006] ECLI:EU:T:2006:265
- Judgment of the Court of First Instance of 30 January 2007 in Case T-340/03 *France Telecom SA v Commission* [2007] ECLI:EU:T:2007:22
- Judgment of the Court of First Instance of 17 September 2007 in Case T-201/04 *Microsoft* [2007] ECLI:EU:T:2007:289
- Judgment of the Court of First Instance of 9 September 2009 in Case T-301/04, *Clearstream Banking AG and Clearstream International SA v Commission* [2009] ECLI:EU:T:2009:317
- Judgment of the General Court of 6 July 2010 in Case T-342/07 *Ryanair v Commission* [2010] EU:T:2010:280
- Judgment of the General Court of 24 May 2012 in Case T-111/08 *MasterCards Inc and Other v Commission* [2012] ECLI:EU:T:2012:260
- Judgment of the General Court of 9 March 2015 in Case T-175/12 *Deutsche Börse v Commission* [2015] EU:T:2015:148
- Judgment of the General Court of 11 January 2017 in Case T-699/14 *Topps Europe Ltd v Commission* [2017] EU:T:2017:2
- Judgment of the General Court of 10 November 2021 in Case T-612/17 *Google and Alphabet v Commission* [2021] ECLI:EU:T:2021:763.

European Commission decisions

- European Commission decision of 17 December 1975 in (Case IV/26699) *Chiquita*
- European Commission decision of 29 July 1983 in (Case IV/30.698) *ECS v Akzo: interim measures*
- European Commission decision of 29 July 1987 in (Case IV/32.279) *BBI/ Boosy & Hawkes- Interim measures*
- European Commission decision of 22 December 1987 in (Case IV/30.787 and 31.488) *Eurofix -Bauco v. Hilti*
- European Commission decision of 27 May 1998 in (Case IV/JV.1) *Telia/Telenor/ Schibstedt*
- European Commission decision of 3 October 1999 in (Case IV/M.1439) *Telia/Telenor*
- European Commission decision of 3 February 1999 in (Case IV/M.1221) *Rewe/ Meinl*
- European Commission decision of 20 July 2000 in (Case IV/M.0048) *Vodafone/ Vivendi/Canal Plus*

- European Commission decision of 13 October 2000 in (Case No COMP/M.2050) *Vivendi/ Canal+ Seagram*
- European Commission decision of 20 March 2001 in (Case COMP/35.141) *Deutsche Post Ag*
- European Commission decision of 20 April 2001in (Case COMP D3/34493-DSD) *DSD*
- European Commission decision of 25 July 2001 in (Case COMP/C-1/36.915) *Deutsche Post Ag – Interception of cross border mail*
- European Commission decision on 16 July 2003 in (Case COMP/38.233) *Wanadoo Interactive*
- European Commission decision of 24 March 2004 in (Case COMP/C-3/37.792) *Microsoft*
- European Commission decision of 2 June 2004 in (Case COMP/38.096) *Clearstream (Clearing and Settlement)*
- European Commission decision of 19 July 2004 in (Case No COMP/M.3333) *Sony/BMG*
- European Commission decision of 23 July 2004 in (Case COMP/ A.36.568/D3) *Scandlines Sverige AB v Port of Helsinborg*
- European Commission decision of 23 July 2004 in (Case COMP/ A.36.568/D3) S*undbusserne v Port of Helsingborg*
- European Commission decision of 25 July 2004 (Case COMP/C-1/36.915) in *Deutsche Post Ag – Interception of cross border mail*
- European Commission decision of 15 November 2004 in (Case COMP/M.3464) *Kesko/ ICA / JV*
- European Commission decision of 2 May 2005 in (Case COMP/D3/38469) *Complaint relating to charges levied by AIA SA and the Olympic Fuel Company SA*
- European Commission decision of 22 December 2005 in (Case COMP/M.3905) *Tesco/Carrefour*
- European Commission decision of 4 July 2007 in (Case COMP/38.784) *Wanadoo España v Telefónica*
- European Commission decision of 21 August 2007 in (Case Comp/M. 4523) *Travelport/Worldspan*
- European Commission decision of 15 October 2007 in (Case COMP/M.4611) *Egmont/Bonnier.*
- European Commission decision of 8 March 2008 in (Case COMP/M.4731) *Google /DoubleClick*
- European Commission decision of 3 July 2008 in (Case COMP/M.5112) *Rewe/Plus Discount*
- European Commission decision of 15 September 2008 in (Case No COMP/M.5272) *Sony/ Sony BMG*
- European Commission decision of 12 November 2009 in (Case COMP/M.5549) *EDF/Segebel*
- European Commission decision of 16 December 2009 in (Case COMP/C-3/39.530) *Microsoft (tying)*
- European Commission decision of 16 February 2010 in (Case COMP/M.5721) *Otto/Primondo Assets*
- European Commission decision of 12 October 2010 in (Case COMP/M.5932) *News Corp/ BSkyB*
- European Commission decision of 6 January 2011 in (Case No COMP/M.5996) *Thomas Cook/ Travel Business of Cooperative Group/ Travel Business of Midlands Cooperative Society*

- European Commission decision of 30 May 2011 in (Case No COMP/M.6163) *Axa/ Permira/ Opodo/Go Voyages/ EDreams*
- European Commission decision of 7 November 2011 in (Case COMP/M.6281) *Microsoft/ Skype*
- European Commission decision of 19 April 2012 in (Case No COMP/M.6459) *Sony/ Mubadala Development/EMI Music Punlishing*
- European Commission decision of 7 May 2012 in (Case COMP/M.6543) *Ahold/ Flevo*
- European Commission decision of 4 September 2012 in (Case COMP/M.6314) *Telefónica UK/Vodafone UK/ Everything Everywhere/ JV*
- European Commission decision of 21 September 2012 (Case No COMP/M.6458) *Universal Music Group/ EMI Music*
- European Commission decision of 20 December 2012 in (Case COMP/39230) *Rio Tinto Alcan*
- European Commission decision of 22 February 2013 in (Case COMP/M.6847) *Triton/Suomen Lähikauppa*
- European Commission decision of 14 May 2013 in (Case No COMP/M.6884) *ACCESS/ PLG*
- European Commission decision of 14 August 2013 in (Case COMP/M.6956) *Telefonica/ Caixabank/ Banco Santander / JV*
- European Commission decision of 20 September 2013 in (Case COMP/M.6990) *Vodafone/Kabel Deutschland*
- European Commission decision of 9 September 2014 in (Case No COMP/M.7288) *Viacom/ Channel 5 Broadcasting*
- European Commission decision of 16 September 2014 in (Case COMP/M.7282) *Liberty Global/Discovery/All3media*
- European Commission decision of 9 October 2014 in (Case COMP/M.7360) *21st CENTURY FOX/APOLLO/JV*
- European Commission decision of 3 October 2014 in (Case COMP/M.7217) *Facebook/WhatsApp*
- European Commission decision of 10 October 2014 in (Case COMP/M.7000) *Liberty Global/Ziggo*
- European Commission decision of 24 February 2015 in (Case COMP/M.7194) *Liberty Global/ Corelio/W&W/ De Vijver Media*
- European Commission decision of 23 February 2016 in (Case COMP/M.7813) *Sanofi/ Google/ DMI*
- European Commission decision of 3 August 2016 in (Case COMP/M.7978) *Vodafone/Liberty Global/ Dutch JV*
- European Commission decision 20 October. 2016 in (Case COMP/M.8046) *Tui/ Transat France*
- European Commission decision of 6 December 2016 in (Case COMP/M.8124) *Microsoft/LinkedIn*
- European Commission decision dated 4 May 2017 in (Case AT.40153) *E-book MFNs and related matters (Amazon)*
- European Commission decision of 30 May 2017 in (Case COMP/M.8465) *Vivendi/ Telecom Italia*
- European Commission decision of 27 June 2017 in (Case AT.39740) *Google Search (Shopping)*
- European Commission decision of 18 July 2018 in (Case AT.40099) *Google Android*
- European Commission decision of 6 September 2018 (Case COMP/M.8788) *Apple/ Shazam*

- European Commission decision of 18 July 2019 in (Case AT.39711) *Qualcomm (predation)*
- European Commission decision of 16 October 2019 in (Case AT.40608) *Broadcom*

National Court cases

Netherlands

- District Court of Amsterdam Judgement of 21 March 2018 in case C/13/528337/HA ZA 12-1257 *VBO Makelaars v. Funda*, ECLI: NL: RBAMS:2018:1654

United Kingdom

- ATTHERRACES Ltd & Anr v. The British Horse Racing Board & Anr, [2007] EWCA Civ 38
- Flynn Pharma Limited v. Competition and Market Authority and Pfizer Inc. v. Competition and Markets Authority, Nos. 1275-1276/1/12/17, [2018] CAT 11
- *Albion Water Limited v Water Services Regulation Authority* [2009] CAT 31
- UK Employment Tribunal Appeal No. UKEAT/0056/17/DA- Uber BV v. Mr. Y Salam and Others.

United States

- *Verizon Communication Inc v Law Offices of Curtis V Trinko* LLP 540 U.S. __(2003) Supreme Court
- *Pacific Bell Telephone Co v LinkLine Communication,* Inc 555 U.S. 438 (2009) Supreme Court.
- *Ohio et al v. American Express Co. et al*, 585 U. S. (2018) Supreme Court.
- *Apple, Inc. v. Pepper, 587 U.S.* ___ (2019) Supreme Court.
- *SC Innovations, Inc. v. Uber Techs.* Case No. 18-cv-07440-JCS (N.D. Cal. May. 1, 2020) District Court.

South Africa

- *Mittal Steel South Africa Limited and Others v Harmony Gold Mining Company Limited*, Case No. 70/CAC/Apr07, Competition Appeal Court of South Africa.

National Competition Authority decisions

Germany

- Bundeskartellamt Prohibition decision of 20 December 2013 in the case of *HRS*, B9-66/10;
- Bundeskartellamt Prohibition decision of 22 December 2015 in the case of *Booking.com B.V*, B9-121/13.

Switzerland

- Competition Commission COMCO prohibition decision of 19 October 2015 in the case of *Online-booking Platforms for Hotels*

United Kingdom

- CMA decision of 14 August 2012 in case ME/5525/12 *Acquisition of Instagram by Facebook*
- CMA decision of 7 December in Case CE/9742-13 *Phenytoin*

Annex 3 – List of References

Literature

- Ackermann T, 'Excessive pricing and the goals of competition law' (2012) in Daniel Zimmer (ed.) *The Goals of Competition Law* (Cheltenham, UK, Edward Elgar Publishing, 2012)
- Akman P, 'Searching for the Long-Lost Soul of Article 82 EC' (2009) 29(2) Oxford Journal of Legal Studies 267
- Akman P, 'The Theory of Abuse in Google Search: A Positive and Normative Assessment Under EU Competition Law' (2017) 1(2) Journal of Law, Technology and Policy 301
- Ahlborn C, Evans D. S and Padilla J. A, 'The Antitrust Economics of Tying: a Farewell to Per Se Illegality', (2004) 49(1) Antitrust Bulletin 287
- Albors-Llorens A, 'The Role of Objective Justification and Efficiencies in the Application of Article 82 EC', (2007) 44(6) CMLRev. 1727
- Alexiadis P and De Streel A, 'Designing an EU Intervention Standard for Digital Platforms' [2020] EUI Working Paper RSCAS 2020/14 <https://ssrn.com/abstract=3544694 >
- Ambrus A and Argenziano R, ' Asymmetric networks in two-sided markets' (2009) 1(1) American Economic Journal 17
- Amelio A and Jullien B, 'Tying and Freebies in Two-Sided Markets' (2012) 30(5) International Journal of Industrial Organization 436
- Areeda P and Turner D. F, 'Predatory Pricing and Related Practices under Section 2 of the Sherman Act' (1975) 88(4) Harvard Law Review 697
- Armstrong M, 'Competition in two-sided markets' (2006) 37(3) The RAND Journal of Economics 668
- Armstrong M and Wright J, ' Two-sided markets, competitive bottlenecks and exclusive contract' (2007) 32 Economic Theory 353.
- Auer D and Petit N, 'Two-Sided Markets and the Challenge of Turning Economic Theory into Antitrust Policy' (2015) 60(4) Antitrust Bulletin 426
- Bailey D and John L. E (eds.), *Bellamy and Child: European Union Law of Competition*, 8th edn (OUP, 2018)
- Ballon P and Van Heesvelde E, 'ICT platforms and regulatory concerns in Europe' (2011) 35(8) Telecommunications Policy 702
- Baumol W. J, 'Predation and the logic of the Average Variable Cost Test' (1996) 39(1) The Journal of Law & Economics 49
- Bedre-Defolie Ö and Nitsche R, ' When do markets tip? An overview of some insights for policy' (2020) 11(10) Journal of Competition law and Practice 610
- Behringer S and Filistrucchi L, 'Areeda-Turner in two-sided markets' Tilec Discussion paper No.2014-024 < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2454392>
- Belleflamme P and Toulemonde E,' Negative Intra-Group Externalities in Two-Sided Markets' (2009) 50(1) International Economic Review 265

- Belleflamme P and Peitz M, 'Managing competition on a two – sided platform' (2019) 28(1) Journal of Economics & Management Strategy 5
- Bolton P, Brodley J. F and Riordam M. H, ' Predatory Pricing: Strategic Theory and Legal Policy' (2000) 88(8) Georgetown Law Journal 2239
- Bork R. H, *The Antitrust Paradox*, (New York, Basic Books, 1978).
- Bostoen F and Mandrescu D, 'Assessing Abuse of Dominance in the Platform Economy: A Case Study of App Stores' (2020) 16 (2-3) European Competition Journal 431
- Botta M and Wiedemann K,'Exploitative Conducts in Digital Markets: Time for a Discussion after the Facebook Decision' (2019) 10(8) Journal of European Competition Law & Practice 465
- Boudreau K. J and Hagiu A, 'Platform Rules: Multi-Sided Platforms As Regulators' in A. Gawer, (ed.), *Platforms, Markets and Innovation* (Edward Elgar, 2009)
- Bowman W. S, 'Tying Arrangements and the Leverage Problem' (1957) 67(19) Yale Law Journal 19
- Bure F and Bary L, 'Disruptive Innovation and Merger Remedies: How to Predict the Unpredictable?' (2017) 3 Concurrences 1
- Caillaud B and Jullien B, 'Chicken & Egg: Competition among Intermediation Service Providers' (2003) 34(2) The RAND Journal of Economics 309.
- Calcagno C and Walker M, 'Excessive Pricing: Towards Clarity and Economic Coherence' (2010) 6(4) Journal of Competition law & Economics 891
- Calzado J. R and Scordamaglia-Tousis A, 'Groupement des Cartes Bancaires v Commission: Shedding Light on What is not a 'by object' Restriction of Competition (2015) 6(7) Journal of European Competition Law & Practice 495
- Carlton D. W and Waldman M,' The strategic use of tying to preserve and create market power in evolving industries' (2002) 33(2) RAND Journal of Economics 194
- Carroni E, 'Behavior-based price discrimination with cross-group externalities' (2018) 125(2) Journal of Economics 137
- Chakravoti S and Roson R, ' Platform competition in two-sided market: the case of payment networks' (2006) 5(1) Review of Network Economics 118
- Choi J. P and Stefanidis C, 'Tying, Investment and the Dynamic Leverage Theory' (2001) 32(1) The RAND Journal of Economics 52
- Choi J. P and Jeon D. S, 'A Leverage Theory of Tying in Two-sided Markets' (2016) CESIFO Working Paper No. 60073 < https://www.cesifo.org/en/publikationen/2016/working-paper/leverage-theory-tying-two-sided-markets>
- Choudary S. P, *Platform Scale: How an emerging business model helps start-ups build large empires with minimum investment* (1st ed. Platform Thinking Labs publishing, 2015)
- Coate M. B and Fischer J. H, 'A Practical Guide to the Hypothetical Monopolist Test for Market Definition' (2008) 4(4) Journal of Competition Law & Economics 1031
- Condorelli D and Padilla J, ' Harnessing platform envelopment in the digital world' (2020) 16(2) Journal of Competition Law & Economics 143
- Crane D. A, 'Market Power Without Market Definition' (2014) 90 (1) Notre Dame L. Rev 31
- Daigle L, 'On the nature of internet', (2015) Global Commission on internet Governance, Paper series no.7 < https://www.cigionline.org/sites/default/files/gcig_paper_no7.pdf>
- Davis P and Mani V, 'The Law and Economics of Excessive and Unfair Pricing: A Review and a Proposal' (2018) 64(4) The Antitrust Bulletin at 414

- Dubé JP, Hitsch G. J and Chintagunta P, ' Tipping and Concentration in Markets with Indirect Network Effects' (2008) (Chicago GSB, Research paper No.08-08)< https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1085909>
- Duch-Brown N, 'The Competitive landscape of Online Platforms, JRC technical reports, Digital Economy working paper 2017-04, at 4- 10< https://ec.europa.eu/jrc/sites/jrcsh/files/jrc106299.pdf>
- Easterbrook F. H, Predatory Strategies and Counterstrategies (1981) 48 U. Chicago Law Rev 263
- Eben M, 'Fining Google: a missed opportunity for legal certainty?' (2018) 14 (1) European Competition Journal 129.
- Eisenmann T, Parker G and van Alstyn M , 'Strategies for two-sided platforms' (2006) 84(10) Harvard Business Law Review 1
- Eisenmann T, Parker G and van Alstyne M, 'Platform Envelopment' (2011) 32(12) Strategic management Journal 1270
- Etro F and Caffarra C,'On the economics of the Android case' (2017) 13(2-3) European Competition Journal 282
- Evans D. S, 'The Antitrust Economics of Multi-Sided Platform Markets' (2003) 20(2) Yale Journal on Regulation 327
- Evans D. S, ' Some Empirical Aspects of Multi-Sided Platform Industries' (2003) 2(3) Review Of network Economics 191
- Evans D. S and Padilla J. A, 'Excessive Prices: Using economics to Define Administrable Legal Rules' (2005) 1(1) Journal of Competition Law and Economics 97
- Evans D. S, Padilla J. A and Slinger M, 'A pragmatic approach to identifying and analyzing Legitimate Tying cases', in C. D. Ehlermann and I. Atanasiu (eds.) *European Competition Law Annual 2003: What is an Abuse of a Dominant Position?* (Hart Publishing, 2006)
- Evans D. S and Schmalensee R, 'The Industrial Organization of Markets Based on Two-Sided Platforms' (2007) 3(1) Competition Policy International 151
- Evans D. S, 'The Economics of the Online Advertising Industry' (2008) 7(3) Review of Network Economics 359
- Evans D. S, 'The Online Advertising Industry: Economics, Evolution and Privacy' (2009) 23 Journal of Economic Perspectives 37
- Evans D. S, 'How Catalysts Ignite: The Economics of Platform-Based Start-Ups'. In A. Gawer, (ed.), *Platforms, Markets and Innovation* (Edward Elgar, 2009).
- Evans D S, 'Two-Sided Market Definition' (2009) in ABA Section of Antitrust Law, *Market Definition in Antitrust: Theory and Case Studies* <https://ssrn.com/abstract=1396751>
- Evans D. S and Schmalensee R, 'Failure to Launch: Critical Mass in Platform Businesses' (2010), 3-4 < https://ssrn.com/abstract=1353502>
- Evans D. S, 'The Antitrust Economics of Free' (2011) 7(1) Competition Policy International, 1.
- Evans D. S, 'Governing Bad Behavior By Users of Multi-Sided Platforms' (2012) 27(2) Berkeley Technology Law Journal 1201
- Evans D. S, 'Attention Rivalry Among Online Platforms' (2013) University of Chicago Institute for Law & Economics Online Research Paper No. 627 < https://ssrn.com/abstract=2195340 >.
- Evans D. S, 'Economics of Vertical Restraints for Multi-Sided Platforms' (2013) University of Chicago Institute for Law & Economics Online Research Paper No. 626 < https://ssrn.com/abstract=2195778 >.
- Evans D. S, 'The Antitrust Analysis of Rules and Standards for Software Platforms' (2014) 10(2) Competition Policy International 71.

- Evans D. S and Schmalensee R, *The Antitrust Analysis of Multi-Sided Platform Businesses* in Roger Blair and Daniel Sokol, (eds.), *Oxford Handbook on International Antitrust Economics* (Oxford University Press 2014).
- Evans D. S, 'Mobile Advertising: Economics, Evolution and Policy' (2016) < http://ssrn.com/abstract=2786123>
- Evans D. S, 'Multisided Platforms, Dynamic Competition, and the Assessment of Market Power for Internet-Based Firms' (2016). University of Chicago Coase-Sandor Institute for Law & Economics Research Paper No. 753 < https://ssrn.com/abstract=2746095>
- Ezrachi A and Gilo D, 'Are Excessive Pricing Really Self-Correcting?' (2009) 5(2) Journal of Competition law and Economics 249
- Ezrachi A and Gilo D, 'Excessive Pricing, Entry, and Investment: Lessons from the Mittal Litigation' (2010) 76(3) Antitrust Law Journal 873
- Ezrachi A and Stucke M. E, 'Artificial Intelligence & Collusion: When Computers Inhibit Competition', (2015) Oxford Legal Studies Research Paper No. 18/2015; University of Tennessee Legal Studies Research Paper No. 267 < https://ssrn.com/abstract=2591874>.
- Faull J and Nikpay A (eds) *The EU Law of Competition* (3rd edn, OUP, 2014)
- Feases A. R, 'Sharpening the European Commission's tools: interim measures' (2020) 16(2-3) European Competition Journal 404
- Filistrucchi L, Geradin D and van Damme E, *Identifying Two-Sided Markets* (Tilburg Law School Research Paper, No. 008/2012, 2012) <http://ssrn.com/abstract=2008661>.
- Filistrucchi L, Geradin D and van Damme E, 'Identifying Two-Sided Markets', (2013) 36(1) World Competition 33
- Filistrucchi L, Geradin D, van Damme E and Affeldt P, 'Market Definition in Two-Sided Markets: Theory and Practice' (2014) Journal of Competition Law & Economics 293
- Fletcher A, ' Predatory pricing in two-sided markets: a brief comment', (2007) 3(1) Competition Policy International 1
- Fletcher A and Jardine A, 'Towards an Appropriate Policy for Excessive Pricing' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), European Competition Law Annual 2007: A reformed approach to Article 82 EC (Oxford, Hart Publishing, 2008)
- Fletcher A and Hanse D, 'Chapter 2: The Role of Demand Side Remedies in Resolving Competition Concerns' in Damien Gerard and Assimakis Kominos (eds), *Remedies in EU Competition law: Substance, Process and Policy* (Wolters Kluwer, 2020)
- Friederiszick H. W and Gratz L, 'Hidden efficiencies: The relevance of business justifications in abuse of dominance cases', (2015) 11(3) Journal of Competition law and Economics 671
- Gabszewicz J. J, Laussel D and Sonnac N, 'Does advertisement lower the price of newspapers to consumers? A theoretical appraisal' (2005) 87 Economic Letters 127
- Gal M. S and Rubinfeld D. L, 'The Hidden Costs of Free Goods: Implications for Antitrust Enforcement' (2015) UC Berkeley Public Law Research Paper No. 2529425; NYU Law and Economics Research Paper No. 14-44. < https://ssrn.com/abstract=2529425>
- Gebicka A and Heinemann A, 'Social Media & Competition Law' (2014) 37(2) World Competition 149

- Genevaz S and Vidal J, 'Going Digital: How Online Competition Changed Market Definition and Swayed Competition Analysis in Fnac/Darty' (2017) 8(1) Journal of European Competition Law & Practice 30
- Geradin D, Petit N, Walker M, Hofer P and Luis F, 'The Concept of Dominance in EC Competition Law' (2005) <https://ssrn.com/abstract=770144>
- Geradin D and Petit N, 'Price Discrimination under EC Competition Law: The Need for a case-by-case Approach' (2005) GCLC Working Paper 07/05 < file:Users/danielmandrescu/Downloads/gclc_wp_07-05.pdf>
- Gerard D and Kominos A (eds), *Remedies in EU Competition law: Substance, Process and Policy* (Wolters Kluwer, 2020).
- Gore D, van Rooijen A, '*Ex-Post* Assessment of European Competition Policy: The *Microsoft* cases (2021) < https://www.coleurope.eu/system/tdf/uploads/page/gclc_report_draft_-_the_microsoft_cases.pdf?&file=1&type=node&id=5829&force=>
- Gowrisankaran G, Rysman M and Park M, ' Measuring Network Effects in a Dynamic Environment' (May 1, 2010). NET Institute Working Paper No. 10-03 < https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1647037>
- Gökçe E, ' Restoring competition in 'winner-take-all' digital platform markets' (2019) UNCTAD Research Paper No. 40 < https://unctad.org/system/files/official-document/ser-rp-2019d12_en.pdf>
- Graef I, 'Market Definition and Market Power in Data: The Case of Online Platforms' (2015) 38(4) World Competition: Law and Economics Review 473
- Graef I, 'Stretching EU competition law tools for search engines and social networks' (2015) 4 Internet Policy Review 1
- Graef I and Wahyuningtyas Y and Valcke P, 'Assessing Data Access Issues in Online Platforms' (2015) 39 Telecommunications Policy 375
- Gürkaynak G, Ínanılır Ö, Diniz S and Yaşar A. G, 'Multisided markets and the challenge of incorporating multisided considerations into competition law analysis' (2017) 5 Journal of Antitrust Enforcement 100
- Hagiu A, 'Pricing and Commitment by Two-Sided Platforms' (2006) 37(3) The RAND Journal of Economics 720
- Hagiu A, 'Multi-sided platforms: From micro foundations to design and expansion strategies' (2007) Harvard Business School Strategy Unit Working Paper (09-115) <https://ssrn.com/abstract=955584>
- Hagiu A and Wright J, 'Enabling Versus Controlling', (2015) Harvard Business School Working Paper, No. 16-002 < https://www.hbs.edu/faculty/Pages/item.aspx?num=49375>.
- Hagiu A and Wright J, 'Marketplace or reseller?' (2015) 61(1) Management Science 184.
- Haucap J and Heimeshoff U, 'Google, Facebook, Amazon, eBay: Is the Internet driving competition or market monopolization?' (2014) 11 Int Econ Econ Policy 49
- Hein A, Schreieck M, Wiesche M and Krcmar H,'Multiple-Case Analysis on Governance Mechanisms of Multi-Sided Platforms' (2016) < http://andreas-hein.info/portfolio/MKWI_2016_Paper_Camera_Ready_256.pdf>
- Heinemann A and Gebicka A, 'Can Computers Form Cartels? About the Need for European Institutions to Revise the Concertation Doctrine in the Information Age' (2016) 6 (7) Journal of European Competition Law & Practice 431
- Hjelmeng E, ' Competition Law Remedies: Striving for Coherence or Finding New Ways?' (2013) 50(4) Common Market Law Review 1007

- Hoppner T, 'Defining Markets for Multi-Sided Platforms: The Case of Search Engines' (2015) 38(3) World Competition 349
- Hou L, 'Excessive Prices within EU competition Law' (2011) 7(1) European Competition Journal 47
- Hovenkamp E, 'Platform Antitrust' (2018) 44(4) The Journal of Corporation Law 721.
- Hull D. W, 'Tying: A Transatlantic Perspective', in Handbook of Research in Trans-Atlantic Antitrust, ed. by P. Marsden, pp. 287-318 (Edward Elgar Publishing Limited, 2006).
- Jones A and Sufrin B, *EU Competition law – Text, Cases and Materials* (6th edn. OUP, 2016)
- Jullien B, 'Two-sided markets and Electronic Intermediaries' (2005) 51(2-3) CESifo Economic Studies 233
- Kathuria V, 'Platform competition and market definition in the US Amex case: lessons for economics and law' (2019) 15(2-3) European Competition Journal 254.
- Kaplow L, 'Why (Ever) Define Markets?' (2010) 124 Harv. L. Rev 437;
- Katz M and Shapiro C, 'Systems Competition and Network Effects' (1994) 8(2) Journal of Economic Perspectives 93.
- Katz E,' Uber-algorithm alleged to constitute price-fixing', (2016) 225 New York Law Journal 1.
- Khan L. M, 'Amazon's Antitrust Paradox' (2017) 127 Yale Law Journal 710
- Konstantinos S, '*Apple v Pepper*: the unintended fallout in Europe' (2019) 7(3) Journal of Antitrust Enforcement 457
- Kovacic W. E, 'Designing Antitrust Remedies for Dominant Firm Misconduct' (1999) 31(4) Connecticut Law Review 1285
- Lang T, 'European Community Antitrust Law: innovation markets and high technology industries' (1996) 20(3) Fordham International Law Journal 717
- Lamadrid de Pablo A, 'The Double Duality of Two-Sided Markets' (2015) 64 Comp Law 5
- Lerner A. V, 'The Role of 'Big Data' in Online Platform Competition' (2014) < http://ssrn.com/abstract=2482780>
- Levine M. E, ' Price Discrimination Without Market Power' (2002) 19(1) Yale Journal on Regulation 2
- Lianos I, 'Competition law remedies in Europe' in Handbook on European Competition law (Edward Elgar, 2013)
- Loertscher B and Maier-Rigaud F, 'On the Consistency of the European Commission's Remedies Practice' (2020) in Damian Gerard and Assimakis Komninos (eds.) *Remedies in EU Competition Law- Substance, Process and Policy* (Wolters Kluwer, 2020)
- Maier-Riagaud F. P, ' Behavioral versus Structural Remedies in EU competition Law' (2016) in Philip Lowe, Mel Marquis and Giorgio Monti (eds.), *European Competition Annual 2013, Effective and Legitimate Enforcement of Competition Law* (Hart Publishing, 2016)
- Mantzari D, 'Interim Measures in EU competition Cases: Origins, Evolution and Implications for digital Markets' (2020) 11(9) Journal of European Competition Law & Practice 487
- Marsden P, ' Google Shopping for the Empress's New Clothes – When a Remedy Isn't a Remedy (and How to Fix it) (2020) 11(10) Journal of Competition Law and Practice 553
- Martens B, 'An Economic Policy Perspective on Online Platforms', Institute for Prospective Technological Studies Digital Economy working paper 2016/05.

- Maxwell W. J and Pénard T, 'Regulating Digital Platforms in Europe – A White Paper' (2015) <https://ssrn.com/abstract=2584873>.
- Mehra S. K, 'US v. Topkins: can price fixing be based on algorithms?' (2016) 7(7) Journal of European Competition Law and Practice 470
- Monti G, 'Behavioral Remedies for Antitrust Infringements- Opportunities and Limitations' (2013) European Competition Law Annual 185
- Motta M and de Streel A, Exploitative and exclusionary pricing in EU law in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *European Competition Law Annual 2003, What Is an Abuse of a Dominant Position?* (Oxford, Hart, 2006).
- Motta M and de Streel A, 'Excessive Pricing in Competition Law: Never Say Never?' in Swedish Competition Authority (ed.), *The Pros and Cons of High Prices* (Stockholm, Konkurrensverkt, 2007)
- Motta M and Vasconcelos H, 'Exclusionary Pricing in a Two-sided Market' (2012) Centre for Econ. Pol'y Research, Discussion Paper No 9164 < https://cepr.org/active/publications/discussion_papers/dp.php?dpno=9164#>
- Nalebuff B, 'Bundling, Tying and Portfolio Effect' (2003) DTI Economics Paper No.1 Part 1. <http://faculty.som.yale.edu/barrynalebuff/BundlingTyingPortfolio_Conceptual_DTI2003.pdf>
- Nalebuff B, 'Exclusionary bundling' (2005) 50(3) The Antitrust Bulletin 321
- Nazzini R, 'The wood began to move: an essay on consumer welfare, evidence and burden of proof in Article 82 EC cases', (2006) 31(4) European Law Review 518
- Nazzini R, 'The Evolution of the Law and Policy on Tying: A European Perspective From Classic Leveraging to the Challenges of Online Platforms' (2016) 26 Journal of Transnational Law and Policy; King's College London Law School Research Paper No. 2018-04 < https://ssrn.com/abstract=3112557>
- Newman J. M, ' Antitrust in Zero-Price Markets: Foundations' (2014) 164 University of Pennsylvania Law Review 149
- Newman J. M, 'Antitrust in Zero-Price Markets: Applications' (2016) 94(29) Wash U L Rev 51
- Niels G, Jenkins H and Kavanagh J, *Economics for Competition Lawyers* (2nd Ed, Oxford press publishing, 2016)
- O'Connor D, 'understanding online platform competition: common misunderstandings', (2016) Internet Competition and Regulation of Online Platforms, Competition Policy International 1
- O'Donghue R and Padilla J, *The law and Economics of Article 102 TFEU* (2nd Edition, Hart Publishing, 2013)
- O'Donghue R and Padilla J, *The law and Economics of Article 102 TFEU* (3nd Edition, Hart Publishing, 2020)
- Ostrovosky M, ' Choice Screen Auctions' NBER Working paper Series, WP28091 < https://www.nber.org/papers/w28091>
- Parker G. G, Van Alstyne M. W and Choudary S. P, *Platform Revolution* (W.W. Norton & Company, 2016)
- Paulis E, 'Article 82 and Exploitative Conduct' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *European Competition Law Annual 2007: A reformed approach to Article 82 EC* (Oxford, Hart Publishing, 2008)
- Poolsombat R and Vernasca G, 'Partial Multihoming in Two-sided Markets' (2006) Discussion Papers, Department of Economics, University of York, < https://EconPapers.repec.org/RePEc:yor:yorken:06/10 >
- Posner R. A, *Antitrust Law: An Economic Perspective* (University of Chicago Press, Chicago, 1976)

- Pozdnakova A, 'Excesive Pricing and the Prohibition of the Abuse of Dominant Position under Article 82 EC' (2010) 33(1) World Competition 120.
- Richman B. D and Usselman S. W, 'Elhauge on Tying: Vindicated by History' (2014) 49(3) Tulsa Law Review 689
- Rindova V. P, Yeow A, Martins L. L and Faraj S, 'Partnering portfolios, value! creation logics, and growth trajectories: A comparison of Yahoo and Google (1995 to 2007)' (2012) 6(2) Strategic Entrepreneurship Journal 133
- Ritter C, 'Does the Law of Predatory Pricing and Cross-Subsidisation Need a Radical Rethink?' (2004) 27(4) World Competition 622.
- Robertson V.H.S.E, 'Excessive data collection: Privacy considerations and abuse of dominance in the era of big data' (2020) 57(1) Common Market Law Review 161
- Rochet J. C and Tirole J, 'Platform competition in two-sided markets' (2003) 1(4) Journal of the European Economics Association 990
- Rochet J. C and Tirole J,' Two-sided markets: An overview', (2004) <https://pdfs.semanticscholar.org/1181/ee3b92b2d6c1107a5c899bd94575b0099c32.pdf>
- Rochet J. C and Tirole J, 'Two-sided markets: a progress report' (2006) 37(3) The RAND Journal of Economics 645
- Roller L.H, 'Exploitative Abuses' in Claus-Dieter Ehlermann and Isabela Atanasiu (eds), *European Competition Law Annual 2007: A reformed approach to Article 82 EC* (Oxford, Hart Publishing, 2008)
- Rose V and Bailey D (eds), *Bellamy and Child: European Union Law of Competition* (7th edn, Oxford 2013)
- Rousseva E (ed.) *EU antitrust Procedure* (Oxford University Press, 2020)
- Rysman M,' The Economics of Two-sided Markets', (2009) 23(3) Journal of Economic Perspectives 125
- Schirrmacher N. B, Ondrus J and Kude T, 'Launch strategies of digital platforms: platforms with switching and non-switching uses' In Proceedings of the 25th European Conference on Information Systems (ECIS), Guimarães, Portugal, June 5-10, 2017 (ISBN 978-989-20-7655-3) Research Papers.<https://aisel.aisnet.org/ecis2017_rp/43>
- Schneider C, Weinmann M and vom Brocke J, 'Digital Nudging-Guiding Choices by Using Interface Design' (2018) Communications of the ACM, 61(7) < https://ssrn.com/abstract=3052192>
- Schmalensee R and Evans D. S, 'Industrial Organization of Markets with Two-Sided Platforms' (2007) 3(1) Competition Policy International 151.
- Shampanier K, Mazar N and Ariely D, 'Zero as a Special Price: The True Value of Free Products' (2007) 26(6) Marketing Science 742.
- Staykova A. S and Damsgaard J, Platform Expansion Design as Strategic Choice: The Case of WeChat and Kakaotalk (2016). Research Papers 78 <https://aisel.aisnet.org/ecis2016_rp/78 >
- Sufrin B, 'The notion of dominance in competition law: An overview of EU and national case law', (2012) e-Competitions <http://awa2013.concurrences.com/business-articles-awards/article/the-notion-of-dominance-in>
- Sullivan T. E, 'Antitrust Remedies in the U.S and EU: Advancing a Standard of Proportionality (2003) 48(2) Antitrust Bulletin 377
- Thépot F, 'Market Power in Online Search and Social Networking: A Matter of Two-Sided Markets' (2013) 36(2) World Competition 195
- Thomas C, Harengel P and Hock-Döpgen M, 'The perception of value of platform-based business models in the sharing economy: Determining the drivers of user loyalty' (2019) 13(3) Review of Managerial Science 1.

- Thurman N and Fletcher R, 'are newspapers heading toward post-print obscurity?' (2018) 6(18) Digital Journalism 1003
- Tiwana A, *Platform Ecosystems* (Elsevier, 2014)
- Van Den Berg R, *Comparative Competition Law and Economics*, (Edward Elgar, 2017)
- Van der Vijver T, 'Article 102 TFEU: How to Claim the Application of objective justification in the case of prima facie dominance abuses?' (2013) 4(2) Journal of Competition law and Practice 121
- Vezzozo S, 'Online Platforms, Rate Parity, and the Free Riding Defense' (2016) <https://ssrn.com/abstract=2802151>
- Vuorinen J, ' Better together: the Evolution of tying theory and Doctrine in EU competition Law and US Antitrust Law' (2015) 1(1) Nordic Journal of Commercial Law 1
- Völcker S. B and Baker D, 'Why there is no antitrust case against Apple's App Store: a response to Geradin & Katsifix' (2020) <https://ssrn.com/abstract=3660896>.
- Weller S. W, 'The past, Present and Future of Monopolization Remedies' (2009) 76(1) Antitrust Law Journal 11
- Whinston M. D, 'Tying, Foreclosure and Exclusion' (1990) 80(4) The American Economic Review 837
- Williamson O. E, 'Predatory Pricing: A Strategic and Welfare Analysis' (1977) 87(2) Yale Law Journal 284.
- Wish R and Bailey D, *Competition law* (8th edn, OUP, 2016).
- Wright J,' One-Sided Logic in Two-Sided Markets ' (2003) AEI-Brookings Joint Center Working Paper No. 03-10. <https://ssrn.com/abstract=459362>
- Wu T, *The attention merchants* (Alfred A. Knofpt, 2016).
- Zeng Y, Houba H and van der Laan G, 'Note on 'Competition in Two-sided Markets' (2015) Tinbergen Institute Discussion paper (TI 2015-080/II) < https://papers.tinbergen.nl/15080.pdf>
- Zinngal F and Becker F, 'Drivers of optimal prices in two-sided markets: the state of the art' (2013) 63(12) Journal für Betriebswirtsch 87

Other Sources

Publications by international organizations

- International Competition Network, ' Report on Predatory Pricing' (2007) < http://old.internationalcompetitionnetwork.org/uploads/library/doc354.pdf>
- OECD (2005) Roundtable on Barriers to Entry DAF/COMP(2005)42< https://www.oecd.org/competition/abuse/36344429.pdf>
- OECD (2006) Roundtable on remedies and sanctions in abuse of dominance cases < https://www.oecd.org/competition/abuse/38623413.pdf>
- OECD (2006) Competition on the merits DAF/COMP(2005)27.
- OECD (2009) Roundtable on two-sided markets DAF/COMP/WD(2009)69 < https://www.oecd.org/daf/competition/44445730.pdf>
- OECD (2009) Roundtable on Two-sided Markets DAF/COMP/WD(2009)69, note by the Delegation of the European Commission in <https://ec.europa.eu/competition/international/multilateral/2009_jun_twosided.pdf>
- OECD (2012) Roundtable on Excessive pricing DAF/COMP(2011)18 < https://www.oecd.org/competition/abuse/49604207.pdf>
- OECD (2012) Roundtable on Market Definition DAF/COMP(2012)19 < https://www.oecd.org/daf/competition/Marketdefinition2012.pdf> .

- OECD (2012) Roundtable on Market Definition – Note by the Delegation of the European Union 31 May 2012 (DAF/COMP/WD(2012)28) < https://ec.europa.eu/competition/international/multilateral/2012_jun_market_definition_en.pdf>
- OECD (2013) Roundtable on The Role and Measurement of Quality in Competition Analysis DAF/COMP(2013) <http://www.oecd.org/competition/Quality-in-competition-analysis-2013.pdf>
- OECD (2013) Exploring the Economics of Personal Data: A Survey of Methodologies for Measuring Monetary Value, OECD Digital Economy Papers, No. 220 http://dx.doi.org/10.1787/5k486qtxldmq-en
- OECD (2015) Global Forum for Competition Law, The impact of disruptive innovation on Competition Law Enforcement, DAF/COMP/GF(2015)16/FINAL < https://www.oecd.org/competition/globalforum/disruptive-innovations-competition-law-enforcement.htm>
- OECD (2016) Roundtable on Price Discrimination – Background note from the Secretariat DAF/COMP(2016)15 <https://one.oecd.org/document/DAF/COMP(2016)15/en/pdf>
- OECD (2017) Network Effects and Efficiencies in Multisided Markets – Note by H. Shelanski, S. Knox and A. Dhilla, DAF/COMP/WD(2017)40/FINAL < https://one.oecd.org/document/DAF/COMP/WD(2017)40/FINAL/en/pdf>
- OECD (2018) Rethinking Antitrust Tools for Multi-Sided Platforms < https://www.oecd.org/daf/competition/Rethinking-antitrust-tools-for-multi-sided-platforms-2018.pdf>
- OECD (2018) Roundtable, Implications of E-Commerce on competition policy DAF/COMP(2018)3 < https://one.oecd.org/document/DAF/COMP(2018)3/en/pdf>
- OECD (2020) Abuse of dominance in digital markets'<www.oecd.org/daf/competition/abuse-of-dominance-in-digital-markets-2020.pdf >
- OECD (2020) Roundtable on Merger Control in Dynamic Markets < http://www.oecd.org/daf/competition/merger-control-in-dynamic-markets.htm>.

Authority Publications

- Bundellekartelamt and Autorite de la concurrence, Joint report on competition law and data (10th of May 2016), 11-25 < http://www.autoritedelaconcurrence.fr/doc/reportcompetitionlawanddatafinal.pdf>.
- Bundeskartellamt, Working Paper – The Market Power of Platforms and Networks, Ref. B6-113/15, June 2016 < https://www.bundeskartellamt.de/SharedDocs/Publikation/EN/Berichte/Think-Tank-Bericht-Langfassung.pdf?__blob=publicationFile&v=2> .
- Data Protection Supervisor, Preliminary Opinion of the European Data Protection Supervisor- Privacy and competitiveness in the age of big data: The interplay between data protection, competition law and consumer protection in the Digital Economy (March 2014). Available online at: < https://edps.europa.eu/sites/edp/files/publication/14-03-26_competitition_law_big_data_en.pdf>.
- European Commission Press Release, Commission clears the creation of the Covisint Automotive Internet Marketplace IP/01/1155 (31 July 2001) < https://ec.europa.eu/commission/presscorner/detail/en/IP_01_1155>
- European Commission Press Release, Commission clears electronic multi-bank trading platform for foreign exchange products IP/02/943 (27 June 2002).

- European Commission, 'Discussion paper on the application of Article 82 of the Treaty to exclusionary abuses (2005) < https://ec.europa.eu/competition/antitrust/others/discpaper2005.pdf >
- European Commission, Study on the coverage, functioning and consumer use of comparison tools and third-party verification schemes for such tools', Final report prepared by ECME Consortium (2013) (EAHC/FWC/2013 85 07) < https://ec.europa.eu/info/sites/default/files/final_report_study_on_comparison_tools_2013_en.pdf> .
- European Commission staff working document on online platforms accompanying the document Communication on online platforms and the digital single market {COM(2016) 288} , SWD(2016)172 < https://ec.europa.eu/transparency/documents-register/detail?ref=SWD(2016)172&lang=en>
- European Commission, Staff Working Document Accompanying the document Report from the Commission to the Council and the European Parliament Final report on the E-commerce Sector Inquiry, COM (2017) 229 final < https://ec.europa.eu/competition/antitrust/sector_inquiry_swd_en.pdf>.
- European Commission, Expert report by Crémer J, de Montjoye YA and Schweitzer H 'Competition Policy for the Digital Era' (2019) < https://ec.europa.eu/competition/publications/reports/kd0419345enn.pdf>
- European Commission Press release, ' Commission opens investigation into Apple's App Store rules' (16 Jun. 2020) at: <https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1073>
- MonopolKommission, Special Report by the Monopolies Commission pursuant to section 44(1)(4) of the Act Against Restraints on Competition, 'Competition Policy: the challenge of digital markets', (2015) special report n 68 < http://www.monopolkommission.de/images/PDF/SG/s68_fulltext_eng.pdf>.

Other publications

- Altexsoft, 'History of Flight booking: CRSs, GDS Distribution, Travel Agencies, and Online Reservations' (Altexsoft, 12 Apr. 2019) <https://www.altexsoft.com/blog/travel/history-of-flight-booking-crss-gds-distribution-travel-agencies-and-online-reservations/>
- BBC New technology, ' Slack makes EU antitrust claim against Microsoft over Teams' (22 Jul. 2020, BBC News) at: < https://www.bbc.com/news/technology-53503710>
- Bohn D, 'Google to phase out third party cookies in Chrome, but not for two years' (The verge, 14 Jan. 2020) < https://www.theverge.com/2020/1/14/21064698/google-third-party-cookies-chrome-two-years-privacy-safari-firefox>
- Bursztynsky J, 'Apple becomes first U.S company to reach a $2 trillion market cap' (CNBC Tech, 19 Aug. 2020) <https://www.cnbc.com/2020/08/19/apple-reaches-2-trillion-market-cap.html>
- Curry D, 'PayPal revenue and usage statistics 2021' (Business of Apps, 18 Mar. 2021) < https://www.businessofapps.com/data/paypal-statistics/>
- Darrow B, 'Shocker! Amazon remains the top dog in cloud by far, but Microsoft, Google make strides', (Fortune, May 2015)< http://fortune.com/2015/05/19/amazon-tops-in-cloud/>
- Del Rey J, ' After 15 years, eBay plans to cut off PayPal as its main payment processor' (Vox, 31, Jan. 2018) https://www.vox.com/2018/1/31/16957212/ebay-adyen-paypal-payments-agreement>

- Drozdiak D, ' Hotel site accuses Booking, Expedia of EU Antitrust breaches' (Bloomberg, 11 Jun. 2019) < https://www.bloomberg.com/news/articles/2019-06-11/hotel-site-accuses-booking-expedia-of-breaking-eu-antitrust-law>
- European Parliament, DG for internal policies, 'Challenges for Competition Policy in a Digitalized Economy' (2015) IP/A/ECON/2014-12, PE 542.235 < https://www.europarl.europa.eu/RegData/etudes/STUD/2015/542235/IPOL_STU(2015)542235_EN.pdf>.
- Ibanez Colomo P, ' The Android decision s out: the exiting legal stud beneath the noise' ChillinCompetition Blog (18 July 2018) https://chillingcompetition.com/2018/07/18/the-android-decision-is-out-the-exciting-legal-stuff-beneath-the-noise-by-pablo/ >
- Jeffries A,' To Head Off Regulators, Google Makes Certain Words Taboo' (The Markup, August 7 2020) < https://themarkup.org/google-the-giant/2020/08/07/google-documents-show-taboo-words-antitrust>
- Jordan J 'How Much Does an eCommerce Website Cost in 2018?' (*Atlantic BT*, 9 April 2018) <https://www.atlanticbt.com/blog/how-much-does-ecommerce-website-cost/>
- Knopper S, 'The end of owning music: How Cd's and Downloads Died' (RollingStone, 14 Jun. 2018) <https://www.rollingstone.com/pro/news/the-end-of-owning-music-how-cds-and-downloads-died-628660/>
- Kompaniets A, ' How much does it cost (and the cost structure) to build an app like UberEats' (Uptech) < https://uptech.team/blog/how-much-to-build-app-like-ubereats>
- Lomas N, ' Europe's Android 'choice' screen keeps burying better options' (Techcrunch, 8 Mar. 2021) <https://techcrunch.com/2021/03/08/europes-android-choice-screen-keeps-burying-better-options/>
- Mamiit A, 'Google removes Disconnect, other privacy apps from Android Play store' (Tech Times 29 August 2014) <http://www.techtimes.com/articles/14379/20140829/google-removes-disconnect-mobile-other-privacy-apps-from-android-play-store.htm>
- May K, "how 25 years of the Web inspired the travel revolution' (The Guardian, 12 Mar. 2014) < https://www.theguardian.com/travel/2014/mar/12/how-25-years-of-the-web-inspired-travel-revolution>
- Schulze E, 'Amazon faces probe from Italy's antitrust authority over abuse of market position' (16 Apr. 2019, CNBC) https://www.cnbc.com/2019/04/16/amazon-faces-probe-from-italys-antitrust-authority-over-abuse-of-market-position.html>
- Shah S, 'The History of social networking' (Digital Trends, 14 May 2016) <https://www.digitaltrends.com/features/the-history-of-social-networking/>
- Stigler Center for the study of the economy and state, ' Stigler Committee on Digital Platforms (2019) < https://www.chicagobooth.edu/-/media/research/stigler/pdfs/digital-platforms---committee-report---stigler-center.pdf>
- Spotify 'Time to Play Fair – Frequently Asked Questions' www.timetoplayfair.com/frequently-asked-questions/
- Sutter, J. D, 'Amazon seller lists book at $23,698,655.93 – plus shipping' (CNN, April 2011) < http://edition.cnn.com/2011/TECH/web/04/25/amazon.price.algorithm/>
- Toplensky R, ' Brussels poised to probe Apple over Spotify's fees complaint' Financial Times (Brussels 5 May 2019) < https://www.ft.com/content/1cc16026-6da7-11e9-80c7-60ee53e6681d >

- UK Data and Marketing Association, Guidelines for data collection and usage (subject to the current GDPR framework) < https://dma.org.uk/uploads/misc/third-party-data-guide-1.0.pdf>
- Walker M. A, 'Myspace removes 90,000 sex offenders', CNBC News (2 march 2009) available online at: < http://www.nbcnews.com/id/28999365/ns/technology_and_science-security/t/myspace-removes-sex-offenders/#.WM0WVFUrKUk>.
- Wiewiórowska-Domagalska A, 'Online Platforms: How to Adapt Regulatory Framework to the Digital Age?' (Briefing for the IMCO Committee of the European Parliament, 2017) 3-4http://www.europarl.europa.eu/RegData/etudes/BRIE/2017/607323/IPOL_BRI(2017)607323_EN.pdf

Platform usage policies

- Amazon, Marketplace seller policies < https://sellercentral.amazon.com/gp/help/external/G1801>
- Apple, App Store information for developers based on the business model they intend to implement in their app < https://developer.apple.com/app-store/business-models/>
- Apple, App Store pricing guidelines for developers< https://developer.apple.com/app-store/review/guidelines/>
- Apple, App Store review policies for new and existing apps approved for commerce in the App Store < https://developer.apple.com/app-store/review/>
- Booking.com, Pricing information for property owners < https://partner.booking.com/en-us/help/commission-invoices-tax/how-much-commission-do-i-pay>
- Instagram, Privacy Policy for all users <https://help.instagram.com/519522125107875>
- Google, Play Store developer policy < https://play.google.com/about/developer-content-policy/>
- Google, Privacy policy for all users <https://policies.google.com/privacy?hl=en-US>
- PayPal, Usage policy for Ebay: https://www.paypal.com/ws/smarthelp/article/do-i-need-a-paypal-account-to-pay-for-an-ebay-item-faq427
- Tripadvisor, Sponsored search service page concerning ranking and placement results upgrades <https://www.tripadvisor.com/business/sponsored-placements>
- UberEats, Pricing policies for restaurants< https://restaurants.ubereats.com/us/en/pricing/>
- Youtube, Premium membership services policy < https://www.youtube.com/premium

Executive Summary

This dissertation assesses the various challenges involved in the application of the current framework of EU antirust law, and in particular art. 102 TFEU to online platforms. The dissertation is based on the combined research that resulted in the publication of six separate articles and a supplementary chapter. Looking into various topics and considering different angles this dissertation addressed the following main research question: '*To what extent can the current framework of EU antitrust law, and in particular art. 102 TFEU, account for the multisided nature of online platforms and accommodate an application capable of attaining a similar level of enforceability as in non-platform market settings?*'.

An inquiry into the economic, commercial and technological characteristics of online platforms reveals that that the application of the current framework of EU antitrust law to such actors will give rise to multiple challenges. Many of those challenges relate to the multisided nature of such players. The multisided nature of online platforms entails that they cater their services to two or more separate customer groups, meaning they operate on multiple separate yet related markets simultaneously. When brought within the ambit of EU antitrust law, these circumstances would mean that the scope of the legal analysis under such framework might also have to be adjusted correspondingly. Accordingly, generally speaking, when assessing the potential anti-competitive effects as well as the efficiencies generated by the practices of the concerned platform(s) in each case, such assessment may have to extend to more than one market at a time. In turn, this may mean that certain cases will require delineating multiple separate yet related relevant markets. Furthermore, where infringements of EU antitrust law are indeed identified, designing effective remedies might equally require measures that extent across multiple markets simultaneously.

In practice, adjusting the application process if EU antitrust law to the multisided nature of online platforms will entail taking into account several core settings that are inherent to this nature. Generally speaking, the most important of such settings will be the network effects at play, the homing patterns of the platform customer groups (single or multi-homing) and the skewed pricing structures of platforms.

Taking into account the network effects and homing patterns of platform customers in each case will have a significant impact on the outcomes of all stages of the application of the current EU antitrust law framework.

When defining the relevant market, the presence and intensity of (indirect) network effects and the presence of multi-or single homing patterns by the platform customers will determine to a great extent the number of markets that should be defined as well as their respective scope. The skewed pricing structures in such cases will also determine whether the SSNIP test needs to be replaced by a non-price centered test if such structures include zero priced offers with respect to certain platform customer groups.

When assessing the anti-competitive effects of the commercial practices of the platform(s) under investigation, the network effects and homing patterns will determine likelihood and scope of harm that can be expected to arise from its actions. Accordingly, when dealing with potentially anti-competitive behavior such an extended assessment may determine whether such practices are legitimate, or otherwise an abuse of dominance under art. 102 TFEU or a restriction of competition under art. 101 TFEU. When designing remedies, taking account of the network effects at play and the homing patterns of platform customers will determine the intrusiveness of the envisaged measure as well as the number of markets that need to be covered by it.

In cases where the investigated behavior of the concerned platforms involves their pricing practices, taking into account the inherent use of skewed pricing structures by platforms will be essential for assessing the permissiveness of their practices. This aspect, taken together with the network effects and the homing patterns of platform customers, will contribute greatly towards establishing whether certain pricing practices concern prohibited exclusionary or exploitative practices when implemented by dominant platforms. The manner in which such skewness needs to be accounted for in each case will depend on the type of infringement that is considered and its corresponding theory of harm. Where abusive practices are indeed identified, this same composition of settings will also provide guidance on how the pricing strategies of the concerned platform(s) ought to be adjusted so as to comply with EU antitrust law while being mindful of the commercial and economic constraints of platform pricing structures.

Finally, throughout the entire application process, is it imperative that the technical aspects of platforms are crystalized and translated into the specific context of EU antitrust law based on their working in practice. Such technical aspects are often given little attention, however their inclusion in the legal and economic analysis will have significant implications for the entire application process. For example, the outcome of the market definition process for online platforms will often depend on the technical characteristics of these actors, which will significantly determine the degree of interchangeability between platform undertakings that are thought to be (potential) competitors.

Furthermore, establishing whether certain practices constitute an abuse of dominance or a restriction of competition will often depend on whether their technical manifestation is adequately identified and understood. This is particularly important in the process of expansion that all platforms go through at a given point in time as such process will inevitably entail some form of cross market leveraging. In such cases anti-competitive leveraging actions such as tying and bundling strategies can easily become obscure when these are technically implemented. This can occur for example through cross platform sign-in obligations (i.e. using platform A requires signing in with an account of platform B) or the unsolicited creation of cross platform profiles (creating an account for platform A automatically creates one for platform B as well), which are often used in practice and are rarely viewed with suspicion. Similarly, with the rise of price monitoring and setting software, understanding the workings of such software together with the manner and context in which it is applied could determine whether the use of such software can be seen as a form of concerted practices or a legitimate practice. Of course, given the logical link between infringements of EU antitrust law and their corresponding remedies, the technical of online platforms will also need to be taken into account when designing remedies. Failing to do so would risk coming up with disproportionate remedies that require technically unfeasible adjustments or otherwise ineffective remedies that may be circumvented or minimized. Therefore, correctly contextualizing the technical architectures and functionalities of online platforms will be indispensable for applying the current EU antitrust law framework to their practices.

Based on the research presented in this dissertation, it is submitted that accommodating all these platform related considerations in the current framework of EU antitrust law is overall possible but requires supplementary efforts in order to be workable. Often such efforts will simply concern additional guidance for existing practice. For example, under the existing framework there is nothing truly preventing the definition of multiple relevant markets in a given case, however, what remains to be developed is a guiding methodology for deciding when and how this should be done. Similarly, there are no legal hurdles that would exclude the possibility of converting the SSNIP test to non-price test carrying the same logic, however, doing so requires also introducing a corresponding procedural framework that determines how such test should be constructed and applied. The assessment of anti-competitive behavior across markets is also certainly possible, and at times even required within the current framework, however, the manner in which such effects should be assessed needs to be established.

In other instances accommodating the current framework to online platforms may require the adjustment of certain existing legal tests for infringements. Although such adjustments may appear more significant they do not

require substantively deviating from existing practice but rather translating such practice to the setting of multisided markets. Accordingly, the respective frameworks can remain intact, however, their mode of application may have to be redefined. In this respect the matter of remedy design entails perhaps the most evident example.

Creating remedies capable of dealing with the fast paced and unpredictable market dynamics of online platforms, will require using the current framework of Regulation 1/2003 more creatively than before. Such creative use would entail a strategic combination of interim measures and final (behavioral or structural remedies) or the introduction of flexible remedies consisting of multiple measures that are triggered based on market developments. Despite being unconventional, these options are feasible within the existing legal framework of Regulation 1/2003 and are imperative for the effective application of EU antitrust to online platforms. Such solutions could prevent network effects, which are inherent to online platforms, from amplifying the competitive harm produced by such actors. In extreme circumstances these may even help prevent markets from tipping or alleviate some of the competitive harm in case of markets that have tipped.

Although the commercial behavior of online platforms is increasingly being covered by newly developed regulatory frameworks, it is noted that such developments are not likely to make the need for adjustments to the existing framework of EU antitrust in practice less acute. This is because platform-specific frameworks, such as the Digital Markets Act (DMA), will apply solely to a sub-set of online platforms and address a (limited) pre-defined scope of undesirable practices. Consequently, the majority of practices implemented by online platforms that are capable of raising competitive concerns will remain to be addressed under the scope of EU antitrust law.

With these insights in mind, the conclusion of my dissertation is therefore that the current framework of EU antitrust can, to a great extent, account for the multisided nature of online platforms and ensure its enforceability with respect to these actors. Achieving this outcome in practice will require, however, translating such framework as a whole, throughout all the stages of its application, to the commercial, economic and technical settings of online platforms. Doing so will often require revisiting the boundaries of such framework and re-defining some of the forms of its application so as to maintain its enforceability in an effective manner. The research covered in this dissertation attempts to provide guidance as to how such task should be performed. Such guidance is not intended to be exhaustive nor exclusive but rather present various possibilities in which the current framework could be adjusted to deal with online platforms. Alternative solutions may, in time, also prove to be suitable provided that the core rationale of this dissertation is followed, namely that the distinguishing multisided nature of online platforms requires being taken into account throughout the entire

application process of the current EU antitrust framework. Treating such process as 'old wine in new bottles' and perusing similar approaches as in the case of traditional non-platform markets will undoubtedly lead to undesired outcomes of over-or underenforcement.