Relevant Product Market Definition In Two-Sided Markets Under EU Competition Law

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Abstract

Market delineation process and market definition is at the core of application of EU Competition Law, especially when it comes to the cases dealing with Article 102 of the Treaty on the Functioning of the European Union and Council Regulation (EC) No 139/2004 on the control of concentrations between undertakings. Defining markets help practitioners set the stage by narrowing down the analysis on a set of products and economic interactions. The task has to be done in precision because boundaries of the market define the area where the competitive effects are assessed.

However, caution must be taken when the process involves products in two-sided markets as these may pose a threat to the integrity of this process if unique characteristics of these markets such as interlinked demands and price-cost interactions are left unconsidered.

In this respect, the aim of this article is to assess to what extent the conceptual and economical tools which are readily applied are applicable to two-sided products and to identify the required modifications needed. As a rule of thumb, existing modes of analysis shall not be applied to two-sided markets without carefully assessing whether the underlying assumptions are applicable. Otherwise, one-sided approach could exclude one side of the market out of consideration, a common issue mostly encountered in cases with advertisement-supported media, leaving the assessment short of analysis of competitive effects of one side or the effects that one side has over the demand of the other side.

Keywords: *Two-sided markets, market definition, EU Competition Law, indirect network effects, platform markets.*

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Avrupa Birliği Rekabet Hukukunda Çift Taraflı Pazarlarda İlgili Ürün Pazarının Tanımlanması

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Öz

Avrupa Birliği (AB) Rekabet Hukuku uygulamasında ilgili ürün pazarının tanımlanması süreci, özellikle AB'nin İşleyişi Hakkında Antlaşma'nın 102. maddesi ve 139/2004 sayılı Teşebbüsler Arası Yoğunlaşmaların Kontrolüne İlişkin Konsey Tüzüğü kapsamında yapılacak incelemeler açısından kilit bir role sahiptir. Bu tip incelemeler açısından ilgili ürün pazarının belirlenmesi, rekabetçi analizin yapılacağı çerçeveyi çizmekte ve ekonomik analizin temelini oluşturmaktadır. Bu nedenledir ki, ilgili ürün pazarının tanımlanması süreci; titizlikle uygulanacak, incelemeye konu ürünlere ve bu ürünlerin yer aldığı pazarın dinamiklerine bağlı esnek bir forma ihtiyaç duymaktadır.

AB Rekabet Hukuku uygulamasının geçmiş son on yılı göstermiştir ki, teknolojik gelişime bağlı olarak sayıları artan "yeni ekonomi" pazarları ile birlikte kapsamı daha da genişleyen "çift-taraflı ürün"leri konu alan incelemeler kapsamında gerçekleştirilecek ilgili ürün pazarı tanımlamalarında; alışılagelmiş araçların kullanımı hatalı sonuçlar doğurabilmektedir. Bu pazarlarda gözlemlenen birbirine bağlı talep fonksiyonları, farklı fiyat-maliyet ilişkileri gibi ekonomik karakteristiklerinin analize doğru bir biçimde yansıtılması gerekmektedir.

Bu kapsamda, çalışmanın amacını, çift taraflı ürünler açısından, ilgili ürün pazarının tanımlanmasında kullanılan kavramsal ve ekonomik araçların uygulanabilirliğinin test edilmesi ve ortaya çıkan sonuçlar doğrultusunda yapılması gereken uyarlamaların tespit edilmesi oluşturmaktadır.

Pratikte dikkat edilmesi gereken ilk husus, geleneksel pazarlarda kullanılan yöntemlerin, ancak bu yöntemlerin dayandıkları varsayımların ele alınan çift taraflı pazar açısından geçerli olduğunun dikkatli bir şekilde tespit edilmesinden sonra uygulanmalarıdır. Aksi halde tek taraflı pazarlar için geliştirilen bu yaklaşımlar, reklam destekli medya pazarlarına ilişkin analizlerde görülebildiği üzere, pazarın bir tarafının diğer tarafı üzerindeki etkilerinin gözden kaçırılmasına ve analizin eksik kalmasına neden olabilmektedir.

Anahtar Kelimeler: *AB Rekabet Hukuku, çift taraflı pazarlar, ilgili ürün pazarının tanımlanması, dolaylı ağ etkileri, platform endüstrileri.*

INTRODUCTION

Two-sided (or multi-sided) markets can simply be defined as markets in which firms serve two distinct but connected consumer groups whose demands are interlinked so that the demand by one customer on one side is affected positively (or in rare cases negatively) from the participation of the customers on the other side. [1] The product offered in these markets usually acts as a platform where the customers get the chance to internalize these positive valuations they have over the participation of the other group.

This interlinked structure of demand differs from the one faced by firms in traditional markets and has a significant effect on the way the platform operator makes economic decisions including the prices it charges.[2] In some occasions the pricing decisions can create particular price structures where one of the customer groups charged a zero or even a negative price. This further contradicts with the understanding of traditional markets where the main economic theories rest in the assumption that there always is a positive price.[3]

These unique economic fundamentals of two-sided markets, as expected, were the reasons behind the creation of a new area of discussion led by both the academics and the competition authorities on the proper application of competition law in these markets. The debate drew much attention since its emerge, as understanding and finding an answer to this discussion became more and more valuable with the increasing growth of the internet and e-commerce and as a result, expansion and development of many new markets with two-sided demand. At the current state, it appears a consensus has been reached that a different approach should be taken when analyzing two-sided markets especially when dealing with the core issues such as defining relevant markets, measuring market power, analyzing

[1] EVANS, D.S. (2003b), "The Antitrust Economics of Multi-Sided Platform Markets", *20 Yale Journal on Regulation 325*, p. 331.

[2] EVANS, D.S. and R. SCHMALENSEE (2007), "The Industrial Organization of Markets with Two-Sided Platforms", *3 Competition Policy International 151*.

[3] NEWMAN, J.M. (2014), "John M Newman, 'Antitrust in Zero-Price Markets: Foundations", http://ssrn.com/abstract=2474874, accessed 22.02.2018.

the effects of vertical restraints, etc.[4] Within this context, the aim of this article is to add to this discussion and to provide practitioners of competition law with an introductory framework in one of the mentioned core topic areas: defining the relevant product market in two-sided markets within the framework of EU Competition Law.

It is clear for everyone involved with competition law that the market definition is the first step in handling competition cases of any kind. The process of defining relevant markets, establishes the area of effective competition relevant to the case, identifies active economic agents, and exposes competitive constraints at effect. By accomplishing these, market delineation sets the stage for the tools and models of analysis to be applied, and thus it has a decisive role for the remainder of the assessment process. An error committed in this stage may lead to a blocking of a welfare-enhancing merger, or in a regulatory environment may cause one undertaking to be found mistakenly dominant and imposed conditions more than necessary, disrupting the efficient market mechanism. The mentioned ability to drastically alter the conclusions of a case is the reason why in appeal cases, a mistake found in the definition of relevant market would usually be enough for a judge to dismiss the whole case.[5]

For two-sided markets where there are two linked customer groups whose demand affects each other and a pricing mechanism in place to balance this effect, defining relevant markets becomes a more demanding task. The way of thinking needs to be adjusted to understand how demands work and quantitative tools derived from the demand in one-sided markets needed to be modified with reference to unique pricing mechanisms. Though demanding, failing to notice these effects and not being able to delineate the relevant market successfully is not

[4] EVANS, D.S. (2013a), "Attention to Rivalry among Online Platforms and Its Implications for Antitrust Analysis", Coase-Sandor Institute for Law and Economics Working Paper No. 627, https://chicagounbound.uchicago.edu/law_and_economics/68/, accessed 22.08.2018.

[5] FILISTRUCCHI, L., D. GERADIN, E. van DAMME and P. AFFELDT (2014), "Market Definition in Two-Sided Markets: Theory and Practice", *10 Journal of Competition Law and Economics 293*, p. 294.

an option for competition authorities as they will risk a higher chance to commit Type I or Type II errors[6] like the ones mentioned above. [7]

None would dispute that in order to accomplish a successful market delineation process; the starting point should be to try to fully understand the general working dynamics of the market. Following a similar trail here, in the following part the focus also will be on distinguishing two-sided markets. The basic economics of two-sided markets and main types that are commonly observed will be presented while underlining the unique pricing mechanisms and demand interactions that make these markets differ from their one-sided counterparts. The possible shortcomings of the application of the standard analysis or techniques used in defining one-sided markets will be examined in the second part. The section will work both as a ground for development for the following part and as well as a `things to avoid` list. Third part will be devoted to the recommendations on the way to approach market definition in main types of two-sided markets and also on required changes to quantitative techniques identified in the previous sections. The article will be finalized with a suggestions and conclusions part.

1. THE ECONOMICS OF TWO-SIDED MARKETS

Market delineation processes start with the products that are supplied by the firms under inspection and continue by the addition of close substitutes[8] to this mix until reaching a market where a hypothetical monopolist can profitably increase price. Thus, it is critical for practitioners to understand the economics and characteristics of the products that they are dealing with possess, as this initial understanding will determine the path that will be taken. Accordingly, in this part,

[6] Type I error, in this context, would mean defining relevant markets larger than they are and a Type II error would mean finding an undertaking is dominant while it is not.

[7] EVANS, D.S., M. D. NOEL (2008), "The Analysis of Mergers That Involve Multi-Sided Platform Businesses", *4 Journal of Competition Law and Economics 663*, p. 667.

[8] Commission refers to demand-side substitutability, supply-side substitutability and potential competition as the primary sources manifesting the disciplinary force on the suppliers or a given product or service. European Commission (1997), *Commission Notice on the Definition of Relevant Market for the Purposes of Community Competition Law* (Notice on Relevant Market), para. 13.

conceptual and economic basics of two-sided businesses and their effect on strategies regarding pricing/output decisions will be presented. The information provided will assist in understanding; the nature of two-sided products, how firms supplying these products behave and the reasons behind all these.

1.1. Definition of Two-Sided Markets

The most acclaimed definition of two-sided markets is given by Evans,[9] who defines a two-sided market as a market where a firm, by selling two different products to two different customer groups and thus acting as a platform, is able to internalize indirect network effects that exists between the demands of the two customer groups. As the definition demands, two-sided market exists under the condition that the customer groups are not in a position to internalize these indirect network effects on their own.[10] This definition is an expanded definition of two-sided markets given by Rochet and Tirole in their seminal paper,[11] where under their terms, a two-sided market is a market in which it is possible for the firm to alter the quantity demanded by each side by changing its price structure (ratio of prices charged to each side) while keeping the price level (the sum of two prices) constant.

There are numerous two-sided markets examples both from what can be regarded as `old` industries as well as new-economy industries including internet-based businesses. Payment systems where sellers and consumers interact through cards or other means, auction platforms, video game consoles, stock exchanges, on-demand video streamers like Youtube, online intermediaries such as Amazon or EBay and search websites are few of the prominent examples.

Turning back to definitions, it is safe to infer that the two main features of two-sided markets are the existence of indirect network effects between customer groups and the platforms' ability to create

[9] Evans 2003b, p.331.

[10] This also implies that the customers cannot pass through price differences they face. ROCHET J.C. and J. TIROLE (2006), "Two-Sided Markets: A Progress Report", *37 The RAND Journal of Economics 645*.

[11] ibid, s. 664.

a value by making it possible for the groups to benefit from these externalities. Indirect network effects are deemed to be present when a customer group values the platform more and more as the number of customers on the other side increases.[12] This effect can also emerge as a result of the demand being affected not only from size but also from parameters such as quality or the special characteristics of the other group that the other group finds valuable. [13] Therefore, most critical component of competition in two-sided markets is the ability of accumulate participants on each side as this will increase the overall demand for the product.

In other words the existence of indirect network effects and the platforms' task to overcome transaction costs are two main aspects that are separating two-sided markets from traditional ones.[14] It is these aforementioned features that constrain two-sided market definition to only a limited number of markets even though at first glance all markets can look like they are `two-sided`.[15] Traditional markets also cater two different sides: buying from the suppliers and selling downstream. However, in traditional markets, the moment when the firms buy the product from upstream supplier, the risk passes on and the supplier is no longer affected by the number of customers that the intermediary firm faces. Also after the transaction, the upstream firm does no longer require the services of the intermediary.[16] In two-sided markets, though, the sides benefit as long as the platform serve to harmonize their demands.[17] In other words, in two-sided markets

[12] THÈPOT, F. (2013), "Market Power in Online Search and Social Networking: A Matter of Two-Sided Markets", *36 World Competition 195*, p. 197.

[13] EVANS, D.S. and R. SCHMALENSEE (2013), "The Antitrust Analysis of Multi-Sided Platform Businesses", http://ssrn.com/abstract=2185373, accessed 22.02.2018, p. 9.

[14] BUDZINSKI O. and J.F.H. LARSEN (2012), "The Morgan Stanley/Visa Saga: How does Economics help Address Double-Sided Markets?", *3 Journal of European Competition Law and Practice 212*, p. 213.

[15] FILISTRUCCHI, L., D. GERADIN and E. van DAMME (2012), "Identifying Two-Sided Markets", TILEC Discussion Paper No 2012-008, http://ssrn.com/abstract=2008661, accessed 08.03.2018, p. 2.

[16] HAGIU, A. (2006), "Merchant or Two-Sided Platform?", Harvard NOM Working Paper No 950100, http://ssrn.com/abstract=950100, accessed 08.03.2018.

[17] Budzinski and Larsen 2012, p. 213.

the valuation of the product for one side depends on its performance attracting the other[18] and the product's existence depends on two sides' continuous participation.

Since most two-sided markets are dominated by positive indirect network effects, firms need to serve both sides of the market at once as the participation of one side rests on the condition that the other is populated to a certain degree and vice a versa.[19] This requirement may create an obstacle for new firms. Failure to reach a certain threshold of users on one side may cause the other side deciding not to join and thus further reducing the value of the platform. This downward spiral will end where no users on each side remain and the firm eventually exits from the market.[20] In this fashion, a competition for the market environment can emerge unless one or two sides multi-home, i.e. participates in more than one platform.[21]

Although the presence of indirect network effects is essential for a product market to be labeled as two-sided, their effect on demand do not need to be always positive. In some cases the demand of one of the customer groups may fall as a result of the number of customers on the other side, signaling negative indirect network effects.[22] There may be also some markets, such as job-matching agencies or exchanges with physical grounds on one side, where members on one side may get negatively affected by congestion on their side while at the same time positively ranking the number of participants on the other side.[23] Finally, in certain settings, unlike standard inter-group effects, both

[18] RYSMAN, M. (2009), "The Economics of Two-Sided Markets", *23 Journal of Economic Perspectives 125*, p. 126.
[19] CAILLAUD, B. and B. JULLIEN (2003), "Chicken & Egg: Competition among Intermediation Service Providers", *34 The RAND Journal of Economics 309*.
[20] EVANS, D. S. and R. SCHMALENSEE (2010), "Failure to Launch: Critical Mass in Platform Businesses", http://ssrn.com/abstract=1353502, accessed 08.03.2018, p. 1.
[21] EVANS, D.S. and R. SCHMALENSEE (2008), "Markets with Two-Sided Platforms", http://ssrn.com/abstract= 1094820, accessed 08.03.2018, p. 678.
[22] Filistrucchi, Geradin and van Damme 2012, p. 4.
[23] BARDEY, D., H. CREMER and J.M. LOZACHMEUR (2014), "Competition in Two-Sided Markets with Common Network Externalities", *44 Review of Industrial Organization 327*, p. 329.

sides may benefit from an increase in the participation on one side and a decrease on the other.[24]

1.2. Classification of Two-Sided Markets

Two-sided markets can have different roles in facilitating the realization of the network effects and creating value for the participants. Depending on these roles, firms in these markets choose distinct pricing and product plans to be able to serve the two-sides as well as balancing their interests in the most profitable way.[25] Thus, understanding the main role the platform carries is crucial because as mentioned this has an effect on the way how the platform generates revenues and sets its prices.[26]

Evans identifies three main types of two-sided markets according to their role in customers' interactions.[27] These are market-makers, audience-makers and demand coordinators. According to this definition, the products under market-makers reduce searching or transaction costs in general by making it easier for participants at each side to find each other such as Ebay.[28] Audience-makers, on the other hand, gather customers on one side for advertisers to reach them effectively. Newspapers, magazines, and internet content providers which are mostly funded by advertisement revenue fall under this category.

Unlike the first two, Evans' categorization under third type is vaguer as it includes payment card systems as well as software platforms.[29] Software platforms or video game consoles seem to fit this category as

[24] ibid.
[25] EVANS, D. S. (2002), "The Antitrust Economics of Two-Sided Markets", http://ssrn.com/abstract=332022, accessed 08.03.2018, p. 43.
[26] EVANS, D. S. (2003a), "Some Empirical Aspects of Multi-sided Platform Industries", 2/3 Review of Network Economics, http://ssrn.com/abstract=447981, accessed 08.03.2018, p. 194.
[27] ibid, p. 193-195.
[28] CARRIER, M.A. (2013), "Google and Antitrust: Five Approaches to an Evolving Issue", Harvard Journal of Law and Technology Occasional Paper Series, http://ssrn.com/abstract=2304211, accessed 08.03.2018, p. 4.
[29] Evans 2003a, p. 193-195.

they coordinate two similar demands for the platform, both of which increase with the participation of the opposing side. Payment card systems on the other hand, are used for concluding a transaction of any kind irrespective of the venue or the platform where the transaction is taking place. In this way, their role is more on the side of finalizing an already matched demand rather than bringing together two sides through a platform.

Another attempt to classify two-sided markets is made by Filistrucchi et al. who roughly divides two-sided markets into two as `non-transaction` and `transaction` markets depending on whether a transaction between the two sides is concluded over the platform.[30] The first group consists of mainly media markets such as newspapers, broadcasters, internet content providers, etc. where even an interaction between sides is concluded, it is near impossible for third parties such as the platform owner, to observe this. For the other group, the meaning of transaction seems to involve a broad interpretation of the word, since in addition to payment systems, virtual marketplaces or exchanges; it also includes platforms such as operating systems and video game consoles. [31] Although this diversification gives a rough distinction between two-sided markets where it is possible for the firm to price the concluded transactions or not, it overextends by including platform systems where this is not possible, unless combined with an online marketplace.

One point is worth mentioning here. Although listed in both classifications and considered as two-sided in many works done in the area, advertisement-supported markets diverge from other two-sided markets as the indirect network effects usually run in only one direction from advertisers to consumers.[32] This creates a contradiction to the definitions proposed by many scholars[33], all of which involves an element of interdependence of each side for a two-sided market to

[30] Filistrucchi, Geradin, van Damme and Affeldt 2014, p. 298.
[31] ibid.
[32] ZINGALES, N. (2013), "Product Market Definition in Online Search and Advertising", *9 The Competition Law Review 29*, p. 34.
[33] See Filistrucchi, Geradin, van Damme and Affeldt 2014; Filistrucchi, Geradin, van Damme 2012; Evans 2002; Rysman 2009; Zingales 2013; WRIGHT, J. (2003), "One-

exist in the first place. However, unlike payment card systems, online intermediaries or operating systems; many advertisement-supported markets can and do exist with only one side, i.e. with the consumers in the absence of advertisers, as the indirect network effects generally[34] flow only in one direction.[35]

For example, Varian gives the example of Google, an advertisement-supported search engine, as a `two-sided matching mechanism` while the numbers that are presented tell a different story. According to his findings, a `good` estimation of the percentage of users that click advertisers is three and among these consumers, again a roughly three percent actually makes a purchase from the website they have been directed.[36] It is clear from these statistics that only a very small fraction of users actually find advertisements worth clicking.[37] These numbers indicate how small of an area that the number and quality of advertisers occupy in the overall valuation of customers, showing a lack of indirect network effect in this case. It can also be induced that the `matching` and the existence of interlinked two-sided demand arguments made for the advertisement-supported media will be undermined further in the more traditional types of such markets like newspapers or broadcasting. In these markets the link between sides is weakened further as the customer does not have a chance to engage with the

Sided Logic in Two-Sided Markets", AEI-Brookings Joint Center Working Paper No 03-10, http://ssrn.com/abstract=459362, accessed 08.03.2018.

[34] Some readers may have a positive valuation for advertisements of a specific kind in certain cases, like local advertisements in local papers. See KLEIN, B., V.A. LERNER, K.M. MURPHY and L.L. PLACHE (2006), "Competition in Two-Sided Markets: The Antitrust Economics of Payment Card Interchange Fees", *73 Antitrust Law Journal 571*, p. 579. Also Rysman shows that an important friction of consumers who use yellow pages positively value the advertisements. RYSMAN, M. (2004), "Competition Between Networks: A Study of the Market for Yellow Pages", *71 The Review of Economic Studies 483*.

[35] LUCHETTA, G. (2013), "Is the Google Platform a Two-Sided Market?", *10 Journal of Competition Law and Economics 185*, p. 185.

[36] VARIAN, H. R. (2006), "The Economics of Internet Search", *Rivista Di Politica Economica 177*, p. 178.

[37] Although Zingales argues that `some` consumers will be pleased with advertisements, he does not provide a definite statistics. Zingales 2013.

advertiser immediately, reducing the chance that any interaction will happen at all.

Along these lines, it is thus proposed to limit the term `two-sided markets` to situations where a transaction or an interaction is concluded by or over the platform and eventually to situations where there are inter-related indirect network effects on both sides. This identification will leave advertisement-supported markets separated from the definition of two-sided markets. However, this does not mean the proposal extends to the point where it can be argued that advertisement-supported media markets should be treated like one-sided markets. Strategic decisions, especially on pricing, are still highly divergent from the case in one-sided markets as a result of the magnitude of the single indirect network effects stemming from the advertisers' side. Also the funding from advertisers in these markets can create business models where the consumers pay nothing at all, a situation not observed in one-sided markets. The suggested separation will be practical when the article deals with defining relevant markets later on.

1.3. Platform Differentiation and Multi-Homing in Two-Sided Markets

It has been mentioned that the presence of network effects may cause some platforms to tip at the early times of the market, creating a monopoly. However, product differentiation and multi-homing of participants on sides can create a balancing effect to this tipping effect.[38] Hence, it can be inferred that the competitive dynamics and the structure of two-sided markets depend on the number of platforms that customers can use one each side.[39] Thus, for our own purposes

[38] The term `multi-homing` is derived from telecommunications where it is used to define a facility connected to a switching center by two or more lines. `Multi-homing` is used to specify that customers on one side of the market join more than one platform, while `single-homing` means they join only one.

[39] EVANS, D.S. (2013b), "Economics of Vertical Restraints for Multi-Sided Platforms", http://ssrn.com/abstract=2195778, accessed 29 July 2015, p. 6.

existence of multi-homing may point out the perceived competitors for the consumers in a market.

Platforms can undertake vertical or horizontal product differentiation depending on the consumers they want to reach. In vertical differentiation platforms choose quality levels to attract consumers with different levels of income and different demand for quality. A payment card with premium features versus standard cards is such an example. Horizontal differentiation, on the other hand, involves platforms which implement certain features to capture certain customer groups.[40] Examples include newspapers or magazines published for certain interest such as fishing, camping, gaming, etc.

Depending on the differentiation levels, demand structures, network effects and cost structures three different situations can be encountered: only one platform may serve both sides, all platforms may serve both sides (multi-homing on both sides) or there may form a market where one side multi-homes while the other chooses to single-home. [41] Internet content providers are good examples where there is global multi-homing as advertisers affiliate themselves with several platforms while consumers also access competing providers. Video game consoles; however, have only multi-homing on one side. While game producers publish games for different platforms, users usually prefer to stick with one platform similar to the situation observed in markets for operating systems.[42]

1.4. Pricing in Two-Sided Markets

Like any other market, the pricing strategy is fundamental for the success of the platform in two-sided markets. However, because of the interlinked demand structure and the necessity to attract both sides at the same time, the pricing policy is more complex than it is in one-sided markets.[43] A wrong direction taken in forming the price structure

[40] Evans and Schmalensee 2008, p. 680.
[41] Caillaud and Jullien 2003, p. 310.
[42] Evans and Schmalensee 2007, p. 166.
[43] ALEXANDROV, A., G. DELTAS and D. F. SPULBER (2011), "Antitrust and Competition in Two-Sided Markets", *7 Journal of Competition Law and Economics 775*, p. 779.

may mean the end of the platform without reaching the critical mass mentioned above.

Recalling from the start of this part, according to Rochet and Tirole, the recognition that firms in these markets determine prices in a different way is the fundamental reason behind what makes these markets unique.[44] Firms in two-sided markets need to, not just determine the price level but also the price structure. [45] The indicated divergence in fundamentals of pricing is also one of the key reasons behind the idea that competition policy should approach these markets in an alternative way.[46]

To put it basically, the interlinked structure of demands on two sides by indirect network externalities also cause the prices to be linked to each other. Therefore, price on one side depends both on demand and cost of that side and its effect on the participation and revenue of the other side.[47]

To illustrate the difference between one-sided markets and two-sided markets, comparing the reactions after a price increase in each market can be beneficial. For this purpose, let's suppose a firm operating in one-sided market raises the price of its product A. With the increase in price, demand for the product falls and fewer units are sold. Switching to the two-sided example, now let's suppose for example a video game console producer, Sony, increases the price of the games it charges to consumers. [48] An increase in price will mean fewer consumers will demand the platform similar to the case in a one-sided market. However, this time, as the demand of developers for the platform is linked to the number of consumers, their demand will also fall. This will create a further fall in demand from the consumers' side as their valuation of the platform has a strong positive correlation to the number of games produced, i.e. the number of active game

[44] Rochet and Tirole 2006.
[45] Ibid.
[46] Filistrucchi, Geradin and van Damme 2012, p. 6.
[47] Rysman 2009, p. 129.
[48] Although on paper Sony does not determine the price of games directly, it can be argued that Sony alters them through the loyalties it obtains from developers.

developers. This feedback will continue until the demands on both sides settle at a newer lower level under the new price. Depending on the magnitude of network effects Sony can even lose on both sides of the market even though it does not change the price level but only changes the price structure (lowering the price for developers while increasing for consumers).

If there are competing platforms in the market, the effect of a price change is even further strengthened. Returning to the previous example, now suppose some consumers switch to the competing platform of Microsoft after the initial price increase. On top of the value degradation of the platform for the developers after a price increase in the consumers' side, now there is also an increase in valuation of the competing platform by the developers as the relative number of consumers on that platform increases. Following a switch from some developers to Microsoft, the platform's value for the consumers' side also increases. The result is a larger decrease in demand on both sides for the platform that introduces a price increase, in this case Sony's platform.

Considering that the price charged can have a big impact on the demand of the other side through cross-platform and even further through cross-side cross-platform indirect network externalities, the price also loses its strong link to marginal cost as it has with single-side demand.[49] The total cost of serving the marginal consumer becomes lower thatn the marginal cost on that side because incremental participation of consumers creates a better perception of the platform for the opposite side.[50] Thus, the profit maximizing equations on each side becomes;

Marginal Revenue=Marginal Cost – Marginal network effects on other side.[51]

[49] Evans 2002, p. 59.

[50] ROSON, R. (2005), "Two-Sided Markets: A Tentative Survey", 4/2 Review of Network Economics, http://www.researchgate.net/publication/24049716_Two-Sided_Markets_A_Tentative_Survey, accessed 08.03.2018, p. 145.

[51] Klein, Lerner, Murphy and Plache 2006, p. 578.

These phenomena results in a skewed pricing structure where the high beneficiary of the effects are charged a higher price while the source side of these effects end up paying a lower price.[52] Depending on the effect, skewness can be higher and create a structure where one-side paying way above the marginal cost where the other is charged below marginal cost or nothing at all. Thus, a free good offered on its own can be taken as evidence that the good in question is a part of a two-sided market setting.[53] In certain instances, one of the sides can even pay a negative price. This could be achieved by the use of tying[54] in markets where there is a risk that consumers can abuse the negative price by over-consumption, like it has been done in magazines market by tying free gifts or in payments card systems by giving monetary returns on completed transactions.

The mentioned point about free goods deserves further elaboration. A price of zero does not always mean that consumers do not pay anything. For example, although nowadays most advertisement-supported products are free of a monetary charge (free video streaming like YouTube, free search like Google, free television broadcasts or local newspapers given away for free), consumers in these markets pay for these products by being exposed to advertisements. In other words consumers incur an `attention cost` in order to consume these products.[55] A real life example can be given from a study conducted on radio station mergers in U.S. which revealed that an increase in market power on broadcasters' side of the market resulted in higher advertisement minutes, i.e. an increase in price just like it is expected to occur as a result of an increase in market power.[56] The result shows

[52]SCHIFF, A. (2007), "Basic Pricing Principles in Two-Sided Markets: Some Simple Models", http://ssrn.com/abstract=1010553, accessed 08.03.2018, p. 21.

[53] EVANS, D.S. (2011), "Antitrust Economics of Free", http://ssrn.com/abstract=1813193, accessed 08.03.2018, p. 23.

[54] CHOI, J. P. (2010), "Tying In Two-Sided Markets with Multi-Homing", *58 The Journal of Industrial Economics 607*, p. 609.

[55] Newman 2014, p. 8.

[56] JEZIORSKI, P. (2013), "Effects of Mergers in Two-sided Markets: Examination of the U.S. Radio Industry" http://faculty.haas.berkeley.edu/przemekj/2sided.pdf, accessed 08.03.2018, p. 2.

that firms are well aware of the fact that they charge consumers a price in the form of advertisements.

Product differentiation and multi-homing decisions of the actors in certain cases can also have an effect on the pricing decisions, especially on the price structure applied. Single-homing on one side and multi-homing on the other would mean that platforms that can gather higher number of participants from the single-homing side can charge a higher price for the other side.[57] However, this effect is not observable in markets where consumers do not have a preference towards product variety even though they single-home such as operating software markets.[58] The structure in this market is also consistent with the results that suggest markets with captive consumers tend to have a pricing structure in favor of non-captive side.[59]

Based on the analysis presented above, the main points about economics of pricing in two-sided markets can be summarized as follows:

- Irrespective of its market position or market power two-sided markets need to form their pricing strategy to create optimal demand on both sides.[60]

- Prices on one side not only depends on marginal cost and demand elasticity on that side but also the indirect network effects that the side creates, i.e. how much and how strongly it effects the demand of the opposing side.[61]

- Accordingly, firms do not always perceive price on one side as a direct component of their revenue. They can use prices to

[57] RYSMAN, M. (2007), "The Empirics of Antitrust in Two-Sided Markets", *3 Competition Policy International 197*, p. 198.
[58] HAGIU, A. (2009), "Two-Sided Platforms: Product Variety and Pricing Structures", *18 Journal of Economics and Management Strategy 1011*, p. 1023.
[59] ROCHET, J. C. and J. TIROLE (2002), "Platform Competition in Two-Sided Markets" https://ideas.repec.org/p/ide/wpaper/654.html, accessed 08.03.2018, p. 30.
[60] ibid.
[61] EVANS, D. S. and M. D. NOEL (2005b), "Defining Antitrust Markets When Firms Operate Two-Sided Platforms", *3 Columbia Business Law Review 667*, p. 681.

`coordinate` consumers which explains the zero or negative prices in certain markets.[62]

2. SHORTCOMINGS OF THE CURRENT APPROACH IF USED IN DEFINING MARKETS IN TWO-SIDED MARKETS

When dealing with a competition case like an alleged abuse of dominance or a merger, defining the relevant product and geographic markets is one of the first elements that the European Commission considers.

The Commission defines relevant product market as, `A relevant product market comprises all those products and/or services which are regarded as interchangeable or substitutable by the consumer, by reason of the products' characteristics, their prices and their intended use`.[63] The focus of the definition is the consumer, and the market is compromised of goods that apply competitive constraint to a firm while it tries to maximize the number of customers to whom it sells its products.

According to the Commission, a firm faces competitive constraints from three main sources: demand substitutability, supply substitutability and potential competition.[64] Though the Commission does not include the potential competition aspect in the process of defining relevant product market but rather takes it into consideration in the competitive assessment part. This leaves the assessment of demand and supply substitutability as the initial starting point for the Commission's analysis for defining relevant markets.[65]

The task of measuring substitutability relies on the reaction of consumers in the case of demand substitutability and competitors

[62] WHITE, A. and E.G. WEYL (2012), "Insulated Platform Competition", http://ssrn.com/abstract=1694317, accessed 08.03.2018, p. 31.
[63] Notice on Relevant Market, para 7.
[64] ibid, para. 13.
[65] Similar to the case with potential competition, considering again, the Commission mentions that it *may* consider supply substitutability when for the products and sector under consideration it displays an effect equal or close to demand-side substitutability effects. Notice on Relevant Market, para 20.

in the case of supply substitutability, against a change in price. The Commission usually starts with the initial set of products under investigation and expands the market using the so-called SSNIP (small but significant and non-transitory increase in price) test.[66] SSNIP test examines whether a hypothetical monopolist would profitably and permanently increase prices by 5-10% in a given candidate market. If it cannot, further substitute products are added to the candidate market and the test is repeated unless the price increase becomes profitable. The SSNIP test can be seen as the empirical application of the basic intuition behind market definition, i.e. which products consumers regard as interchangeable depending on their price, characteristics and intended use captured in own-price and cross-price elasticity of demand.[67]

As seen in the previous part, in two-sided markets demand interactions and pricing strategies differs in some degree that of those in one-sided markets. The demands of consumers are affected as a result of indirect network externalities, firms set prices considering its effect on the participations of both sides and consequently for each single side, marginal cost-price relationship is loose. Consequently, market analysis in two-sided markets becomes more complex with three or more sides interacting with each other.[68]

Under this setting, several authors argued that the application of traditional tools and approaches derived and used in dealing with one-sided markets, may lead to faulty conclusions. For example, according to Evans, authorities failing to recognize one side of the market can end up with market definitions that are too narrow. [69] Numerous views on quantitative techniques used in market definition process have emerged, suggesting modification of SSNIP and critical loss analysis before their application in two-sided market setting.

[66] Notice on Relevant Market, para. 16-17.

[67] VOIGT, S. and A. SCHMIDT (2005), *Making European Merger Policy More Predictable,* First Edition, Springer, US, p. 27

[68] HESSE, R. B. (2007), "Two-Sided Platform Markets and the Application of the Traditional Antitrust Analytical Framework", *3 Competition Policy International 191*, p. 192.

[69] Evans 2003b, p. 358.

With this background, possible qualitative and quantitative shortcomings of the application of traditional tools will be presented while referring to the case-law where necessary. The practice should reveal the common mistakes and also simultaneously the points where improvements can be made.

2.1. Overlooking Consumers

As some scholars[70] rightly point out there are several cases at the UK and EU level that one side of the market have been ignored, especially in cases concerning advertisement-supported media.

While we agree with most of the views, recalling from the previous part, in our opinion these markets tend to differ from other two-sided markets by the existence of a single-way indirect network effect. The demand of the consumers for the media products do not depend on the number or quality of advertisers. Thus the planned exercise of picking up cases, in which some part of the story could be missing about the two-sided markets, will be accomplished from this point of view.

The first case to be analyzed is the *Archant/Independent News and Media* where the UK Competition Commission[71] (CC) reviewed the acquisition of London Regionals Division of Independent News & Media PLC by Archant Limited.[72] It involved the acquisition of local newspapers by a bigger group.

The CC had an extensive analysis on the relevant market issue; however focused almost solely to advertisers' side.[73] The approach taken by the CC resulted in a market definition encompassing only

[70] Filistrucchi, Geradin, van Damme and Affeldt 2014; WOTTON, J. (2007), "Are Media Markets Analyzed as Two-Sided Markets?", *3 Competition Policy International 237*; Filistrucchi, Geradin and van Damme 2012.

[71] The Competition Commission closed on 1 April 2014. Its functions have transferred to the newly established Competition and Markets Authority.

[72] Competition Commission (2004a), "A Report on the Acquisition by Archant Limited of the London Newspapers of Independent News and Media Limited", http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/reports/2004/fulltext/491.pdf, accessed 08.03.2018.

[73] Competition Commission (2004b), "Appendix E Product Market and Competition", http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-

the advertisers' side[74] and a very limited analysis of the effects of the merger on consumers if not none as argued by Wotton.[75] For example in East London area, one of the geographic markets investigated by the CC, the combined share of the parties rose to 81.1% with a remaining single competitor other than the parties.[76] This could have resulted in an increase in the consumers' exposure to advertisement as a result of increase in the market power of the parties. Although the CC analyzed other type competitive constraints for the market of advertisement and concluded that the transaction did not pose a threat to competition on that side; parties' post-merger ability to increase advertisement space in the newspapers remained unexamined.

Around the same time frame as the *Archant/Independent News and Media* concluded, the CC applied a similar approach to a merger between Carlton Communications Plc (Carlton) and Granada plc (Granada)[77], a merger which resulted in creation of one of the leading commercial broadcasters in Europe. Even though the CC seemed to be aware that consumers' side did exist as it considered the effects of the merger with regarding issues like media pluralism[78] and discussed differences in audience profiles; once again the market is defined solely from advertisers' perspective .[79] Consequently, as it is the case with the *Archant/Independent News and Media,* the effect of merger on consumers did not have a chance to be assessed.

Zooming out to the EU level, in *Google/Doubleclick* merger, where two intermediaries, which connect websites and advertisers, has agreed to merge, the European Commission acknowledged the two-sided nature of the market and narrowed its focus to an initial market of

commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/reports/2004/fulltext/491ae.pdf, accessed 08.03.2018.

[74] Competition Commission 2004a, para. 4.34.

[75] Wotton 2007, p. 242.

[76] Competition Commission 2004a, para. 5.15.

[77] Competition Commission (2003), "Carlton Communications Plc/Granada Plc: A report on the Proposed Merger", http://webarchive.nationalarchives.gov.uk/20111202195250/http:/competition-commission.org.uk/rep_pub/reports/2003/482carlton.htm#full, accessed 08.03.2018.

[78] ibid, para. 1.4.

[79] ibid, para. 5.132.

online advertising intermediation services.[80] The Commission included two similar but different business models, `media agencies` and `ad exchange providers`, as platforms in this initial definition.[81]

However, similar to the cases in the UK, the Commission did not include in its analysis Google's interactions with the consumer side in the markets where it acts as a content provider. The extension of the analysis to this aspect could have added another depth to the investigation. For example it may have been argued that by acquiring more advertisement connections and data as a result of the merger, Google's tendency to behave more competitively on the sides it reaches consumers would also increase, as a high consumer base would further increases its appeal to its acquired advertiser base. Although it was not critical for the outcome of the case, mentioned approach would have linked the effects of the merger to consumers and also would have signaled that consumers are not left behind in the assessments conducted on two-sided markets with free products.

Another similar example is found in the merger between Microsoft's and Yahoo's search businesses. The Commission, citing the *Google/DoubleClick* case, defined the market as online search advertising and again ignored the consumers' side of the market.[82]

The traces of the Commission's reasoning in *Google/DoubleClick* and *Microsoft/Yahoo!,* although from a different perspective, can be found in *Antena 3/La Sexta* [83] and *Newscorp/Premiere*[84] cases, both of which involves concentration of parties active in the Pay TV sector. In *Antena 3/La Sexta*, the Commission, sticking to its precedents, defined Free TV and Pay TV as two different relevant product markets because of the difference in the way firms in these markets finance their operations.[85] The parties' suggestion of relevant market as "all relevant media competing for advertisement" is also

[80] European Commission (2008a), *Google/Doubleclick* (CASE COMP/M.4731), para. 20.
[81] ibid, para. 21-22.
[82] European Commission (2010a), *Microsoft/Yahoo!* (CASE COMP/M.5727), para. 87.
[83] European Commission (2012), *Antena 3/La Sexta* (CASE COMP/M.6547).
[84] European Commission (2008b), *News Corp/Premiere* (CASE COMP/M.5121).
[85] European Commission 2012, para. 16.

rejected by the Commission on the grounds that it conflicts with its precedents.[86]

Filistrucchi et al. rightly points out the irrationality in defining markets on the basis of the way that firms finance their operations. [87] All TV operators whether supported by advertisements or subscription fees actually compete for the same audience in a geographic market. Bania also criticizes the Commission's narrow approach of considering an existence of trade only in cases a monetary exchange happens in media markets by referencing a report prepared by Europe Economics as part of an assignment for the Media Unit of DG Competition.[88]

This approach of the Commission also conflicts with the supply-substitutability as Pay TV operators can switch very easily to operate in Free TV markets by raising funds from advertisements. Furthermore the approach seems to break down under the existence of Pay TV operators who also broadcasts advertisements.

The aforementioned cases are some of the examples of a common approach in advertisement-supported media cases where the authorities ignore one side of the market, the consumers' side and focus solely on the effects of the merger on the advertisers' side.

Some of these results seem to be appearing as a result of a misconception. An example of this misconception can clearly be seen in the judgment by the Court for the Northern District of California in *KinderStart v. Google* where the court declared that a service given away for free cannot constitute a relevant market for the purposes of antitrust law.[89] Just like it is in the process of defining markets, the practitioners dealing with antitrust issues are accustomed to use almost solely the price as a tool of measure to answer questions like whether a merger would increase prices or whether a firm has market power

[86] ibid, para. 17.
[87] Filistrucchi, Geradin, van Damme and Affeldt 2014, p. 326.
[88] BANIA, K. (2013), "European merger control in the broadcasting sector: Does media pluralism fit?", *9 The Competition Law Review 49*, p. 56.
[89] KinderStart v. Google, No C06-2057 (2007) WL 831806 (ND Cal Mar 16 2007).

to increase prices above competitive level.[90] This overcommitment sometimes results in ignoring the consumers' side as shown.

However, as briefly discussed in the previous part it does not mean consumers do not incur any cost when a product is given away without a monetary payment. Consumers have to watch advertisements to enjoy free TV or watching a video through an online streamer such as Youtube. They have to divide their attention between the organic results generated by a search engine and the advertisement that pop-up throughout the screen. They have to wander around the advertisement in a magazine or newspaper to reach content they find relevant.

Failing to notice these aspects of the competition when dealing with the relevant market definition, the practitioners are also losing their chance to see the competitive effects of the issue at hand on consumers. For example, a merger by two free online video streamers may be expected not to cause too much of a problem in the advertisement side. The advertisers probably would have other options whether it is video streaming platform, search engine or another content providing website.[91] On the other hand, merging parties may gather market power against consumers whose preference is towards devoting their limited attention time to video streaming services and such group of consumers may be harmed as a result of the transaction.[92] Even though consumers do not pay to use these web services, merging parties can increase the time consumers have to watch advertisements to view particular content. This can be done by either increasing the duration of advertisements or by increasing their frequency.

Following this section, the next part will focus on the possible shortcomings of the application of quantitative techniques in two-sided markets: SSNIP test and critical loss analysis.

[90] Newman 2014, p. 3.
[91] The Commission does not distinguish between search and non-search online advertising. See *Google/Doubleclick,* para. 334.
[92] Evans 2013a, p.13.

2.2. Shortcomings of the SSNIP Test in Two-Sided Markets

The Commission employs the so-called SSNIP test[93] to trace the products that exert competitive constraints on to the product under scrutiny and accordingly to reach a definition of the relevant product market. The test starts with a single product or a set of products, usually the main concern of the case, and asks if a hypothetical monopolist can profitably increase the price by a small but significant amount (5%-10%) in a non-transitory period. If the answer is yes, the test concludes and the set of products are considered to form the relevant product market. If the answer is no, the test is repeated by adding a substitute product to the mix at a time until the increase in price becomes profitable. Although the SSNIP test, due to data requirements and cost, is hard or unnecessary to employ in every case in practice, it still provides an understanding on the basic reasoning behind the act of defining markets.

Several commentators are on the view that SSNIP test in its current form will produce incorrect results and thus is not applicable in cases involving two-sided markets.[94] Three major issues causing this inapplicability seem to come on top.

First problem identified[95] is that the current form of the SSNIP test cannot account for indirect network effects when assessing

[93] Notice on Relevant Market, para. 17.

[94] Filistrucchi, Geradin, van Damme and Affeldt 2014; Evans and Noel 2008; FILISTRUCCHI, L., T. J. KLEIN and T. O. MICHIELSEN (2012), "Assessing Unilateral Merger Effects in a Two-Sided Market: An Application to the Dutch Daily Newspaper Market", *8 Journal of Competition Law and Economics 297*; VERHAERT, J. (2014), "The challenges involved with the application of Article 102 TFEU to the new economy: A Case Study of Google", *35 European Competition Law Review 265*; EVANS, D. S. (2009), "Two-Sided Market Definition", http://ssrn.com/abstract=1396751, accessed 08.03.2018; Evans and Schmalensee 2013; KERSTING, C. and S. DWORSCHAK (2014), "Does Google Hold a Dominant Market Position? – Addressing the (minor) Significance of High Online User Shares", http://ssrn.com/abstract=2495300, accessed 08.03.2018; Evans and Noel 2005b; EMCH, E. and T. S. THOMPSON (2005), "Market Definition and Market Power in Payment Card Networks", https://ideas.repec.org/p/doj/eagpap/200609.html, accessed 08.03.2018.

[95] Filistrucchi, Geradin, van Damme and Affeldt 2014; Evans and Noel 2008; Filistrucchi, Klein and Michielsen 2012; Evans 2009; Kersting and Dworschak 2014; Emch and Thompson 2005.

profitability of a price increase. As explained before the test looks to find whether there are substitutes available for consumers following a price increase through an assessment of the profitability of the hypothetical monopolist. However, the existence of indirect network effects and revenue generation from two-sides of the market makes the profitability assessment of two-sided market monopolist different from that of its one-sided counterpart. In the same respect, application of the test the way it is conducted in one-sided markets differ too, so raising the price of one of the sides may result in over-estimation of the profitability depending on the magnitude of the indirect network effects.

To better illustrate this, consider a two-sided market where there are positive indirect network effects working both ways. The firms will determine a price structure taking into account these effects and their total marginal cost. Now suppose that in an attempt to define the market, a set of products are chosen on side A and their price is raised by 5% while overlooking the economics mentioned above. This approach will risk the market to be narrowly defined than it is. It may seem by from one-side a monopolist can raise the price profitability as no consideration given for feedback effects that will occur. First, as the demand will fall for the side whose price is increased, this will cause a fall in demand on the other side. Since the effects are working both ways, this will lead a further fall in demand on the first side. Depending on the magnitude of these effects, the hypothetical monopolist can be in a worse situation after the price increase.

It is easy to figure out the outcome of the indirect negative network effects on one side: the results will be reversed. The market will be defined broader than it actually is if the SSNIP test applied to that side only. The increase on demand on the other side and its positive effect on the overall profits of the monopolist will be ignored. As a result, the conclusion of a non-profitable price increase may be reached, followed by the need to add more products to the mix and thus resulting in an expansion of the market.

Secondly, as there are two sides and two prices in two-sided markets, the question, which price should be taken as a starting point, comes

up.[96] The SSNIP test looks for the profitability of the firm after an increase in price of the product. However, in two-sided markets the product has two consumer groups and thus two different prices. The dual pricing makes the SSNIP test in its current form inapplicable.

Finally, the third problem appears in the context of zero-price markets.[97] Since the product on one side is given without a monetary payment, trying to increase the price by 5%-10% would not be possible. Suggesting a lump sum increase would also be meaningless. The business model in such markets suggests that the operation of several zero-price competitors and a change of a non-zero price would mean the loss of the platform's entire consumer base. This is due to the fact that, as mentioned above, in these markets users accustomed to pay by being subjected to advertisements rather than with money.

2.3. Shortcomings of the Application of Critical Loss Analysis in Two-Sided Markets

Critical loss analysis, which was presented first by Harris and Simmons,[98] is commonly used to apply the SSNIP test. Critical loss analysis calculates the percentage drop in sales that would make a price increase by a hypothetical monopolist unprofitable. To accomplish this, first the percentage of sales that will be lost after an X% price increase, the critical loss, is calculated.[99] Later, the actual loss that would occur in the market following the same price increase is obtained.[100] If the actual loss is greater than the critical loss, this would mean the price increase

[96] Filistrucchi, Geradin, van Damme and Affeldt 2014; Kersting and Dworschak 2014; Emch and Thompson 2005; ten KATE, A. and G. NIELS (2008), "The Relevant Market: A Concept Still in Search of a Definition", *5 Journal of Competition Law and Economics 297*.

[97] Zingales 2013; Newman 2014; Verhaert 2014; Evans 2011; SALINGER, M. A. and R. J. LEVINSON (2015), "Economics and the FTC's Google Investigation", *46 Review of Industrial Organization 25*.

[98] HARRIS, B. C. and J. J. SIMMONS (1991), "Focusing Market Definition: How Much Substitution is Necessary?", *21 Journal of Reprints of Antitrust Law and Economics 151*.

[99] The formula for critical loss is; CL=X/(X+PCM) where PCM is the price-cost margin.

[100] The formula for actual loss is; AL=X (ε_{own} - ε_{cross}), where ε_{own} and ε_{cross} denotes own and cross-price elasticity of demand, respectively.

will not be profitable for the monopolist and so the products under analysis should be expanded to reach the relevant product market.

Since it is an application of the SSNIP test, the critical loss analysis also suffers from similar shortcomings if it is used in two-sided markets without modification.

First of all, price-cost markup is primarily used for the calculation of critical loss. However, as it was explained, a firm operating in a two-sided market does not set prices according to the marginal cost on that side but sets them by considering indirect network effects and total marginal cost. Thus using markups on each side separately can result in faulty calculations of critical loss. The extreme case is encountered in the zero-price markets where there is no price and consequently no price-cost margin.

Evans and Noel discusses another possible problem occurring as a result of using single-sided markups without taking into account the indirect network effects.[101] The authors show that the actual loss will be overestimated and the markets will be defined broader if the Lerner Index Formula is used to estimate own-price elasticity of demand resulting in what they call a `Lerner bias`.[102] Because of the indirect network effects, to sustain the observed mark-up, the actual short-run elasticity of demand should be smaller than the one calculated using the Index.[103] To put in other words, because with the feedback effects, a price increase will decrease the demand more in the two-sided case, the own price elasticity must be lower than of a one-sided case in order to sustain the same amount of mark-up.

Lastly, similar to the case with the SSNIP test, ignoring the network effects will also disturb the results of the critical loss analysis. Ignoring a positive indirect network effect would mean that the actual loss that is being calculated is lower than it should be. In this case, the opposite of *Lerner Bias* will be observed and the market will be defined too

[101] Evans and Noel 2008.
[102] ibid, p. 677.
[103] ibid.

narrow. Stronger the indirect network effects, stronger the bias will be.[104] Evans and Noel name this fallacy as `estimation bias`.[105]

3. RECOMMENDATIONS

Thus far, the characteristics of two-sided markets and some issues that did and can arise from disregarding these characteristics in the market definition process have been discussed. These two parts displayed the basics of understanding two-sided markets and commonly experienced shortcomings in market definition process. The aim of this third part, on the other hand, is to present an introductory and applicable introduction for practitioners to use when dealing with cases covering most types of two-sided markets. The part will stick to a similar structure used in the previous section starting with qualitative analysis and then moving on to presenting possible solutions to issues regarding quantitative techniques while benefiting from the case law whenever possible.

To begin with, when dealing with a market supposedly two-sided, the starting point of market delineation process should be to question whether there are indirect network effects in the market. The biggest issues would rise as a result of ignoring these effects or one-side of the market by not noticing the interactions between sides. These effects, if they exist, have to be accounted in the analysis of market definition to successfully comprehend the competitive effects at work[106]. The study to be conducted should also try to figure out the signs and magnitude of these effects even though the latter could be hard to achieve without further quantitative work[107]. In this respect, surveys could be employed to understand the importance attached by the sides to each other. Only after that the interactions and dynamics of the sector would be accessible to the practitioner.

[104] EVANS, D. S. and M. D. NOEL (2005a), "Analysing Market Definition and Power in Multi-Sided Platform Markets", http://ssrn.com/abstract=835504, accessed 08.03.2018, p. 39.
[105] Evans and Noel 2008, p. 673.
[106] Evans and Schmalensee 2013, p.18.
[107] Filistrucchi, Geradin and van Damme 2012, p.11.

After reaching to a conclusion about the network effects the focus should shift to roughly identifying the type of the market. Recalling from part one, according to our definition, two-sided markets can be grouped into roughly three categories: products which create demand by matching the two sides; like operating systems; exchanges which provide a platform for two-sides to make transactions and payment systems where a transaction is concluded by the use of the platform. A distinction has also been made between two-sided markets and advertisement-supported markets for which the indirect network effects are working in one direction or the magnitude of the consumers' side is very weak. Conclusions about the market definition and most importantly the answer to the question whether to define one single platform market or two interrelated markets will be influenced by this distinction, discussed below.

3.1. Two-Sided Markets

In this part relevant case law and literature will be critically assessed to reach some conclusions regarding market definition under the two-sided market notion presented in part one which excludes advertisement-supported media.

Starting with the definition of market in exchanges or transaction mediums, *Travelport/Worldspan*[108] merger decision of the Commission is a good example to see a proper analysis of two-sided markets. The parties to the merger are two firms active in the provision of Global Distribution System (GDS) Services which involves aggregating content from airlines, hotels, car rental companies, etc (Travel service providers - TSPs) and providing this to travel agents (TAs). GDS acts as a technological platform where two sides meet to complete bookings (transactions). The Commission fully notices the two-sided nature of the market and the indirect network effects at work by underlining the fact that if one side is absent the other's demand for the service will be zero.[109] It then defines the `GDS Platforms` as a starting product for

[108] European Commission (2007), *Travelport/Worldspan* (CASE COMP/M.4523).
[109] ibid, para. 4-6.

its market definition[110] and continues on to compare the competitive restraints available from similar two-sided platforms.[111] It considers a new alternative emerging GDS platform and other online exchange platforms.

The Commission also discusses the possibility of including `direct links` formed between individual TSPs and TAs. However, a direct transaction between parties is not a product and thus should not be taken into consideration while defining the relevant market, a situation discussed again further below. In fact, while making the suggestion, the Commission itself also realizes the requirement of a platform for this service and argues that `direct links` can be a substitute unless a TA concludes them with multiple TSPs fulfilled over an accompanying software, or in other words: unless they create their own GDS Platform.[112]

Switching to the Commission's stance in the payment card systems market, two time frames can be identified. First period begins with the *Visa International Service Association* negative clearance decision[113] where the Commission handles the relevant market as a single system (platform) market and goes into discussing if other payment systems such as cheques could be substitutes. It ultimately reaches the conclusion that `card payment systems market` is the relevant market.[114]

It goes further on to identify two types of competition which is similar to inter-brand and intra-brand[115] competition notions which

[110] Although the Commission acknowledges the two-sided market and the platform, it continues to refer the two sides of the platform as `upstream market` and `downstream market` and puts the case like GDS providers offer `different` products in these markets. ibid para 11. In our opinion this does not match with the way the market and the product is identified. It would be faulty to identify different components of the platform as different products offered to the participants. It would be illogical to think that two-different sides use the platform in the same way because this would have eradicated the two-sidedness of the market. There is one market, one product and these two can exist unless the platform is used by both sides even though by different means.

[111] European Commission 2007, para. 6-12.

[112] ibid, para. 9.

[113]- European Commission (2001), *Visa International Service Association,* (Case COMP/29.373).

[114] Ibid, para. 42.

[115] Inter-brand competition is used to define competition between different brands/ producers of the same product while intra-brand competition is used for competition

in time becomes the base of diversion for the Commission. According to the Commission the inter-system competition occurs between different payments systems[116] to acquire banks (network/upstream market) and the intra-system competition occurs between banks to acquire consumers and merchants (intra-system/downstream market).[117]

The whole approach summarized above is preserved in *Visa International MIF* decision, taken one year later in 2002.[118]

After 5 years, however, the Commission changes its approach in *MasterCard* decision[119]. The Commission shifts its primary focus from inter-system competition where payments systems compete to intra-system competition where financial institutions compete. It then goes even further and separates the market into two separate markets at the intra-system competition level.[120] It defines two markets one `issuing market` (or acquiring payment cards) where banks compete for consumers to make them accept their cards and one `acquiring market` (or acquiring payment card transactions) where banks compete this time for merchants to convince them to install their terminals.[121]

In the following *Visa MIF* Case in 2010, the Commission preserves its new approach.[122]

The Commission's understanding of the market observed in the abovementioned cases that there are two levels of competition looks like the right approach to take. In this context the Commission's objection to

between retailers for a specific brand of a product.

[116] This level of market exits in what is called `five-party card scheme` where the financial institution (issuer) contracting with the consumers may be different from the financial institution (acquirer) contracting with the merchants. Issuers and acquirers also make contracts further with another third party; the payment card institution. Thus, there can be five different parties: consumer, merchant, issuer, acquirer and the payment card institution such as Visa or Mastercard. The other example is the `three-party scheme` such as the American Express where the issuer, acquirer and payment card institution are the same firm.

[117] European Commission 2001, para. 34.

[118] European Commission (2002), *Visa International MIF* (Case COMP/29.373).

[119] European Commission (2009), *Mastercard,* (Case COMP/34.579), http://ec.europa.eu/competition/antitrust/cases/dec_docs/34579/34579_1889_2.pdf, accessed 08.03.2018.

[120] ibid, para. 279.

[121] ibid, para. 307-316.

[122] European Commission (2010b), *Visa MIF* (CASE COMP/39.398).

the competitive analysis suggested by the parties' expert in MasterCard that the analysis should see scheme owners, issuing and acquiring banks as a unit offering consumers and merchants a system, also seems relevant.[123] Commission rightly distinguishes that the MasterCard is not jointly offered to the consumers and banks but it is a platform run by MasterCard and a `vehicle for issuers and acquirers to offer distinct services to two groups of customers`.[124]

On the other hand the practice of splitting the card payments market into two as in the mentioned decisions is quite contestable. The Commission defends its stance by referencing its decisions in advertisement-supported media markets where it defined two separate markets.[125] It has been stated that these markets differ from two-sided markets because the network effects are flowing from one-side, implying the product can exist even the advertisement side is missing, such as advertisement-free Pay TVs. In this case of payment cards; however, the demands are interlinked and ignoring one side in market definition may mean ignoring all these effects in the analysis[126]. With this divided market definition it is also impossible to analyze the competitive constraints brought by three-party systems which do not require intermediaries like financial institutions such as American Express.[127]

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[123] European Commission 2009, para. 260.

[124] ibid, para. 261

[125] ibid, para. 267.

[126] It is a fact that the definition of relevant market can depend on the market level under investigation. *Notice on Relevant Market,* para. 33. Different card payment systems or other payment systems might be in competition for capturing banks and financial institutions because at this point of time it is the most common way of reaching consumers and merchants. The Commission's desire to define a market at this level is understandable because the way of competition at this level differs from the one downstream. It can be argued that there are no two-sided effects because there is only one type of consumer: the financial institution. However, it will be wrong to consider the market completely disconnected from the market downstream. The system operators by its fees and prices charged to financial institutions affect their price level, the interchange fee, and ultimately the prices charged to consumers and merchants. *See* European Commission 2001, para. 35. On the other hand, this is a business model choice; a choice over the model used by American Express, and can change. It should be recalled from part one that giving much weight to the analysis of business models in defining markets could be problematic.

[127] Filistrucchi, Geradin, van Damme and Affeldt 2014, p. 313.

Filistrucchi et al. joined by Evans and Noel[128] similarly suggests that for markets such as card payment systems firms have to be on both sides of the market as required by the product's characteristics.[129] A card system, which does not have merchants using it, i.e. a system producing a card that you cannot shop with it in any shop, is useless. Same is true with a card system where all the merchants have installed machines but no bank distributes the card to the consumers. They suggest that in these markets a single market definition comprising the two-sides should be defined.[130] The proposal also extended to the exchanges markets where similar to payment systems, the service given is in fact what enables the transaction to happen.[131] This approach seems in line with the opinion of the European Court of Justice (ECJ) put forward in its *Groupement des Cartes Bancaires* judgement. [132] ECJ, through paragraphs 73-75, stated that the General Court erred in law by not taking into account the interactions between two sides of a payment system while conducting its analysis about a restriction brought by the banks. [133]

Although the main proposal can be supported, the writers' suggestion is that non-intermediary transactions such as cash, PayPal or direct rental should be taken as substitutes as well as other platforms brings a contradiction to it.[134]

First of all, cash and direct rental should not be considered as products or services that are supplied by any firm since they are not `products`. The relevant market tries to define all the products that are part of an economic activity. This approach would suggest consumers doing an activity by themselves such as mowing their lawn is in competition with the firm supplying a similar service.

[128] Evans and Noel 2008.
[129] Filistrucchi, Geradin, van Damme and Affeldt 2014, p. 301.
[130] ibid, p. 302.
[131] ibid.
[132] European Court of Justice (2014), *Groupement des Cartes Bancaires,* Case C-67-13 P.
[133] Although the ECJ did not comment directly on the market definition made by the Commission and upheld by the General Court, it is still a good demonstration of the possible problems that can be caused by an incomplete market definition and deficient analysis it may bring.
[134] Filistrucchi, Geradin, van Damme and Affeldt 2014, p. 303.

Even when they are considered as products, there are no indirect network effects that each side can benefit by `using` those products. The consumers have to search through multiple house owners if they want to increase their chance for a perfect match but they will have to bear all the transaction cost associated with this process. Thus, the suggestion would still contradict with the main idea behind the proposal; that the product or service is unique in itself that it enables the two sides to benefit from these externalities and so the market should be defined accordingly.[135]

Also the PayPal example does not fit the market. PayPal's business model depends on usage of the payment card systems to offer its services. Thus it is a complementary product which oversees that the transactions through the web are concluded safely. Same is true with Apple Pay application which relies on card systems as well. However, in the future these products can evolve and may decide to move the intermediary cards out of the platform to conclude transactions by using their own clearance systems. Bitcoin, which is an electronic peer to peer payment system, may be one such example. Again, these products or ideas may not be at a position to be accepted in the relevant market today but this can change as a result of the evolution of the market ending with a definition compromising of `all payment systems` whether done by using card, an application or a virtual network through the web.

So as it has been put forward, the main idea behind the authors' proposal and the Commission's approach in *Travelport/Worldspan*, *Visa International Service Association, and Visa International MIF* is that for the products where each side has to be on board for them to exist, market definition should include both sides should be supported. However, the use of the product and the way it internalizes network effects and generates value should be carefully assessed and only products with similar ways of internalization should be regarded as substitutes.

Platforms through which no direct transactions are concluded between parties but are indispensable for two sides to coordinate their

[135] Assessed further below, the suggestion may be acceptable in markets such as advertisement-supported media where the effect is on one side only where the platform compete with products that show no network effects.

demands, like operating systems or gaming platforms can be handled within the same group with exchanges and platforms that conclude transactions. However, markets such as mentioned are in constant evolving process and this creates platforms serving multiple sides. For example Android, a mobile operating system by Google, serves to handset manufacturers, application developers and consumers.[136] All these actors do not necessarily need to have network effects flowing from each other. Depending on the case and issues at hand, a two-sided platform (a video game console) may be in competition with platforms with more than one side (mobile operating system). It is important to identify all sides and then choose the ones that are relevant to reach a starting point for the market definition.[137] Lastly, in the last few years we see a trend that these platforms are transforming into structures involving exchanges on themselves thus monitoring and concluding transactions between the two sides, mostly consumers and developers. Thus, it can be said that some of these platforms are also getting closer to the transaction-types.

3.2. Advertisement-Supported Products

In part one, markets which is commonly regarded as two-sided was set aside: advertisement-supported markets.

As it has been identified in the first section the main problem about the cases regarding advertisement-supported products is the tendency to ignore the consumers' side. In these markets the indirect network effects usually run from the advertisers' side and it is rather a business model than a necessity for the product to exist. Unlike for example a video game console, the absence of one side, i.e. the advertisers, does not drop the products' value for consumers to zero. This is perhaps the reason behind why the authorities had the luxury to ignore one-side of the market and define markets focusing on one side.

There are vast numbers of products such as newspapers, magazines, TVs, online search engines, video streaming sites, almost all internet

[136] Evans and Schmalensee 2013, p .17.
[137] ibid, p. 21.

content providers, etc that use a business model which involves financing solely by advertisements. The degree of financing through advertisements is also a business decision, as stressed out in part one. In today's world the balance seems to shift to the point where the product is usually provided for free or at a negative price and revenues are earned from advertisers. This phenomena provides a little hint to practitioners such as observing a `zero` price product would mean there is probably another side where demand is positively influenced by the number of consumers.

All these products can be regarded as products that seek to gather as many consumers as they can in order to create a valuable base for advertisers. Evans names this process as `attention competition` in his work where focusing online advertisement-supported products.[138] He studies usage statistics of web-pages and argues that most online businesses compete with each other to catch the limited amount of attention a consumer each day can give.[139] The fierce competition is to capture this limited amount of time.

So it is required to define one relevant market for the side that products compete for consumers. The question to ask would be how the consumer divides his/her time between different types of `attention seekers` and to what degree these are interchangeable. This is also required in order to be able to assess the competitive effects on the side of consumers. For example, it is mentioned that sometimes quality features such as advertisement time, relevancy of search results, quality of content can factor as the `price` in zero price markets as firms can adjust these to alter the cost of the platform on that side.[140] It may also come as costs by exposing the consumer to give more data with less

[138] Evans 2013a.

[139] ibid, p.12. Mobile applications also compete for the limited attention time that consumers have.

[140] As the price is zero in monetary terms the demand of the consumer depends on the utility he gains minus any attention costs he has to incur.

privacy[141]. For example as stated before, a decrease in advertising time by 10% increases the audience size of a broadcasting network by 25%.[142]

Any change in consumers' demand given to an increase in advertisement time/frequency or decrease in quality of content, i.e. an increase in `price`, thus can be analyzed by qualitative surveys.[143] Dutch Competition Authority (NMA) conducted a survey of that kind when it was assessing a merger between flower auction houses which it regarded as a two-sided market.[144] It was not a case of a zero-price market; however the NMA set to assess the importance of quality factors such as clearing times on sellers' demand and discussed the implications extensively in its assessment of market definition.[145] Similar studies can be employed to pinpoint the products that consumers may switch in the case of an increase in advertisement time or reduction in quality of a free product.

Similarly, advertisers also regard many sources as substitutes to reach consumers. [146] Thus a second market should be defined for the products' side that reaches advertisers. The authorities are quite experienced defining this side of the market as put forward by the case law. For example the Commission accustomed to successfully evaluate all possible products which advertisers compete for when dealing with market definition as found in cases previously mentioned.[147]

3.3. Supply Substitution

In part two product differentiation and the ability to multi-home are given as the explanations for why two-sided markets do not tip to a monopoly and why there can be different platforms competing in a market.[148] These could be important for an analysis conducted under

[141] Newman 2014, p. 35.
[142] WILBUR, K. C. (2007), "A Two-Sided, Empirical Model of Television Advertising and Viewing Markets", http://ssrn.com/abstract=885465, accessed 08.03.2018.
[143] Verhaert 2014, p. 269.
[144] Filistrucch, Geradin and van Damme 2012, p. 16.
[145] ibid.
[146] Evans 2013a, p. 3.
[147] For an example, see *Google/DoubleClick.*
[148] Evans 2013a, p. 15.

the supply-substitution heading though it is rarely used.[149] Especially in internet based-businesses switching or starting a similar platform can be relatively less costly. The ability of multi-homing in two-sides thus can affect the viability of this supply-side substitution effect and subsequently should not be left out of consideration.

3.4. Modifications on SSNIP Test and Critical Loss Analysis

An alternative SSNIP test in two-sided markets is discussed by Emch and Thompson in the context of payment card market.[150] The work dealt mainly with the question of which price should be taken on the test's application and suggested that the price would be the sum of two prices charged by the company to the each side of the market.[151]

However, the market and the way it is presented has received criticism, especially from the Commission who found the work `too simplistic`.[152] The Commission criticizes that the paper deals with five-party card systems like they are three-party systems ignoring the banks that operate between card schemes and consumers.[153] Given that most payment systems are now operating through financial institutions, Commission may have a right to dismiss the request by the parties to conduct a SSNIP test based on this work in its *Mastercard* decision. Besides, the Commission seems to be in favor of avoiding the application of SSNIP test in this market.[154]

However, applying the SSNIP test on the sum of charges seem to be the right way given that total price level and the way it is structured among sides are critical for a two-sided firm rather than a price charged on one side. Applying SSNIP test to the prices on each side separately

[149] ELIZADE, J. (2012), "A theoretical approach to market definition analysis", *34 European European Journal of Law and Economics 449*, p. 450.
[150] Emch and Thompson 2005.
[151] ibid.
[152] European Commission 2009, para. 276.
[153] ibid, para. 276.
[154] ibid, para. 286-287.

will produce a similar mistake identified above, overlooking three-sided platforms like American Express who charge a price only on one–side.[155]

Alexandrov et al. also supports this view in a different way in their work where they propose a two-sided market model for exchanges and matchmakers.[156] They suggest that the SSNIP test should be applied to the bid-ask spread in the case of exchanges and sum of two prices in the case of matchmakers similar to the case in payment card systems.[157]

Filistruchhi contends that although the main reasoning behind is true for all two-sided markets, he argues for a non-transaction platform such as advertisement-supported media one should increase price on one side then on the other.[158] He suggests that after the price increase, the hypothetical monopoly should be allowed to adjust price structure since the firms in a two-sided market would do so in order to extract the maximum gain from network effects.[159]

Recalling from part one, a problem identified was the issue regarding using one-sided Lerner Indexes in two-sided markets. Several attempts have been made to provide alternative formulas in this respect. Rochet and Tirole considers pricing models in markets similar to credit card networks and comes up with Lerner Indexes for these markets again considering the price as the sum of two prices charged to each side.[160] Armstrong conducts a similar work in a market where only one platform operates.[161] Finally, Weyl derives a general two-sided

[155] HESSE, R. B. and J. H. SOVEN (2005), "Defining Relevant Product Markets in Electronic Payment Network Antitrust Cases", *73 Antitrust Law Journal 709*, p. 729. The authors are also supporting that the SSNIP test should be applied to the summation of prices, see p. 728.
[156] Alexandrov, Deltas and Spulber 2011.
[157] ibid, p. 807.
[158] FILISTRUCCHI, L. (2008), "A SSNIP test for two-sided markets: The Case of Media" http://ssrn.com/abstract=1287442, accessed 08.03.2018, p. 11.
[159] ibid, p. 11.
[160] Rochet and Tirole 2002, p. 11.
[161] ARMSTRONG, M. (2002), "Competition in Two-Sided Markets", https://ideas.repec.org/p/wpa/wuwpio/0505009.html, accessed 08.03.2018, p. 6.

Lerner Index by developing the suggested two models which are only applicable in certain two-sided markets.[162]

It is shown that critical loss analysis also suffers similar problems like the SSNIP test. Regarding this issue, Evans and Noel extends the one-sided critical loss and actual loss formulas for two-sided markets.[163] The work also covers advertisement supported markets as well as ways to detect the bias that may occur if one-sided formulas are used.[164]

The results of the works supplied above can be summarized as follows. Although criticized by the Commission, Emch and Thompson's model, which is highly acclaimed in literature and also compatible with our proposal brought for the market definition in payment systems, can be set as the starting point for the SSNIP test in payment card markets. For exchanges and matchmakers, proposal to use the bid-ask spread in the case of exchanges and sum of two prices in the case of matchmakers as the price can be employed as suggested by Alexandrov et al.[165] By putting the price level to its core, this suggestion also goes hand in hand with the market definition compromising both sides. Finally the work done by Evans and Noel is suitable to use in advertisement-supported media which requires definition of two markets one for advertisers' side and one for consumers.[166] When the product is given for free, for the consumers' side change in exposure time to advertisements, frequency of advertisements or quality can be used in place of change in price with the help of questionnaires as suggested.

On the other hand, the SSNIP test (or the critical loss analysis) may not be always applied by the competition authorities because of the data requirements and resulting costs associated with it. Even though there are derived SSNIP tests or critical loss analysis for two-sided markets, the application of these is even more demanding than the one-sided

[162] WEYL, E. G. (2010), "A Price Theory of Multi-Sided Platforms", *100 American Economic Review 1642*.
[163] Evans and Noel 2005.
[164] ibid.
[165] Alexandrov, Deltas and Spulber 2011.
[166] Evans and Noel 2005.

forms because the matrixes for network effects need to be constructed on top of the ones for own and cross-price demand functions.[167]

However, this does not mean SSNIP test should be ignored at all. The formulas derived, even when they are not applied econometrically, still would be very valuable for the practitioners. Sometimes it would be equally beneficial to ask the question theoretically to see what will be the customers' reaction to a price increase to get an overall understanding about the market and shape a loose market definition. These formulas help to visualize these questions and to understand the interactions. Being able to identify correctly the competitive constraints in the market and setting the stage as right as possible will always be the vital part. OFT with a similar mindset decided to use the conceptual framework provided by the SSNIP test rather than directly applying it in its BSkyB/ITV decision.[168]

Finally, if the existence and magnitude of indirect network effects has been established, one-sided formulas can be used to get a projection about whether the issue at hand would create a problem or not. For example let us assume that there is a merger application in a two-sided market. As stated in part one using one-sided formulas will give a narrower market definition under positive indirect network effects. These could be used to assess whether the merger would impede effective competition or not. If it does not, it would also mean that there will not be a problem under the much wider, correct market definition. Similar approaches can be employed for other cases depending on the sign and magnitude of network effects identified.

[167] Filistrucchi 2008, p.1.

[168] Competition Commission (2007), "Acquisition By British Sky Broadcasting Group Plc Of 17.9 Per Cent Of The Shares In Itv Plc", http://webarchive.nationalarchives.gov.uk/20140402141250/http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/reports/2007/fulltext/535.pdf, accessed 09.03.2018, p. 3.

CONCLUSION

Market delineation process and market definition is the core of all competition cases, helping practitioners set the stage by narrowing down the analysis on a set of products and economic interactions. The task has to be done in precision because boundaries of the market define the area where the competitive effects are assessed.

Products in two-sided markets may pose a threat to the integrity of this process if unique characteristics of these markets such as interlinked demands and price-cost interactions are left unconsidered.

As a rule of thumb, existing modes of analysis shall not be applied to two-sided markets without carefully assessing whether the underlying assumptions are applicable. Otherwise, one-sided approach could exclude one side of the market out of consideration, a common issue mostly encountered in cases with advertisement-supported media, leaving the assessment short of analysis of competitive effects of one side or the effects that one side has over the demand of the other side.

Furthermore, in the models obtained from one-sided market experience, marginal cost acts as the basis for price setting mechanism. The competitive assessments are also heavily based on this and practitioners tend to measure competitive effects by observing changes in price. However, because of the presence of joint costs and indirect network effects, the prices lose its strong link to marginal cost in cases involving two-sided markets. This principle affects the assumptions of main models of analysis and should be recognized while analyzing a two-sided product. The unique price setting mechanism of two-sided markets can also produce skewed price structures where in some cases one party ends up paying a zero or negative price. Under such cases the assessment of competitive effects shall not ignore the side not paying a monetary price but rather focus on features such as quality or exposure to advertisement in order to capture any anti-competitive effects.

Quantitative techniques such as SSNIP test and critical loss analysis used in market definition are also affected as a result of the demand interactions and the responses of the two sides to price changes. Depending on the sign and magnitude indirect network effects, these

test may end up defining markets too broadly or too narrowly if not modified to fit the two-sided dynamics.

In order to avoid listed pitfalls, authorities shall be ready to fully identify the sign and magnitude of indirect network effects when they exist. The practice will open the way to understand the interactions between sides and the pricing mechanism at work. Later on, for two-sided products, identified as products where to exist two sides must interact and there should be indirect network effects, the relevant market should be defined to include both sides of the market. Even though there may be products available to one of the sides, breaking the market into two may cloud the competitive effects analysis. In markets of advertisement-supported products, on the other hand, two separate markets need to be defined: the advertisers' side and the consumers' side. The authorities are well experienced defining advertisers' side, a practice which shall question the competitive pressures brought by different advertisers as well as different forms of advertising. The consumers' side of the market also should be defined in every case whether the product is paid for or not. Only then, the picture will be complete.

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