Dipartimento di Scienze Economiche
Università degli Studi di Firenze

Working Paper Series

Market Definition in Two-Sided Markets: Theory and Practice

Lapo Filistrucchi
Damien Geradin
Eric van Damme
Pauline Affeldt

Working Paper N. 05/2013
April 2013

DISEI, Università degli Studi di Firenze
Via delle Pandette 9, 50127 Firenze, Italia
www.dse.unifi.it

Stampato in proprio in Firenze dal DISEI
(Via delle Pandette 9, 50127 Firenze) nel mese di Aprile 2013,
Esemplare Fuori Commercio Per il Deposito Legale
agli effetti della Legge 15 Aprile 2004, N.106

Market Definition in Two-Sided Markets: Theory and Practice

Lapo Filistrucchi*

Damien Geradin†

Eric van Damme‡

Pauline Affeldt§

16 March 2013

Abstract**

Drawing from the economics of two-sided markets, we provide suggestions for the definition of the relevant market in cases involving two-sided platforms, such as media outlets, online intermediaries, payment cards companies and auction houses. We also discuss when a one-sided approach may be harmless and when instead it can potentially lead to a wrong decision. We then show that the current practice of market definition in two-sided markets is only in part consistent with the above suggestions. Divergence between our suggestions and practice is due to the failure to fully incorporate the lessons from the economic theory of two-sided markets, to the desire to be consistent with previous practice and to the higher data requirements and the higher complexity of empirical analysis in cases involving two-sided platforms. In particular, competition authorities have failed to recognize the crucial difference between two-sided transaction and non-transaction markets and have been misled by the traditional argument that where there is no price, there is no market.

JEL codes: L40, L50, K21

Keywords: two-sided markets, two-sided platforms, market definition, SSNIP test, Hypothetical Monopolist test

*Lapo Filistrucchi, Department of Economics and Management, University of Florence, Italy and CentER and TILEC, Tilburg University, The Netherlands. Corresponding Author: Lapo Filistrucchi, Diprtimento di Scienze per l'Economia e l'Impresa, Università di Firenze, Via delle Pandette 9, I - 50127 Firenze, Italy, e-mail: lapo.filistrucchi@unifi.it

† Damien Geradin, TILEC, Tilburg University, The Netherlands and University of Michigan Law School, U.S.A

‡ Eric van Damme, CentER and TILEC, Tilburg University, The Netherlands.

§ Pauline Affeldt, E. CA Economics, Berlin, Germany.

** We thank seminar participants at TILEC work in progress meetings for useful comments and suggestions. We also like thank Ligia Dorobantu for her precious assistance in reviewing payment cards cases This paper draws on "Mergers in Two Sided Market: A Report to the NMa" prepared by TILEC and Howrey for the Dutch Competition Authority (NMa). We thus thank the NMa for financial support. We also thank Antonio Laurenco, Simone Keunen, Consuelo Silva Buston and John Wileur, who contributed to the report. Useful comments were also received from Cedric Argenton, Angelos Dimopoulos, Ron Kemp, Matteo Negrinotti, Bastiaan Overvest, Tjarda van der Vijver and Björn Vroomen. For the additional work leading to this paper, Sarah Charette provided valuable research assistance and Lapo Filistrucchi and Pauline Affeldt acknowledge financial support from a Microsoft grant to TILEC. In both cases funding was provided in accordance with the KNAW Declaration of Scientific Independence. The views expressed in the report and in this article are not necessarily the ones of the NMa, the Microsoft corporation or E.CA Economics. All remaining errors are ours.

Table of Contents

1 INTRODUCTION

In most economic models the relevant market is simply assumed. It is therefore an issue to which most academic economists do not devote much attention. In practice, however, market definition is of great importance for antitrust and regulatory cases. A mistaken definition of the relevant market might for instance lead an antitrust authority or a court to block a welfare-enhancing merger or to allow a welfare-detrimental one. Similarly, a regulatory decision imposing a set of requirements on an incumbent might be socially inefficient if the incumbent faces sufficient competition. Similarly, in the case of an appeal, the recognition of a wrong market definition is often sufficient for a court to reject the whole analysis and to rule in favour of the appellant irrespective of any other argument brought up by the antitrust authority or the regulator.[6] Market definition is therefore the founding stone on which an antitrust case or a regulatory intervention is built.[7]

Although the 2010 US merger guidelines seem to move away from market definition and propose to replace it by the measurement of the Upward Pricing Pressure (UPP)[8], it remains to be seen the extent to which, even in the US, courts will adopt this new concept and allow an antitrust authority to block a merger without having previously defined the relevant market.[9] Moreover, market definition seems bound to remain at least for a few more years the first step in merger cases in other jurisdictions, such as the EU. Finally, even if UPP were to replace market definition in merger cases, market definition would remain crucial in order to establish the existence of a dominant position in cases of abuse of dominance or in order to justify regulatory intervention.

The main purpose of market definition is to identify the products which exert competitive pressure on the products sold by a particular firm or firms, be they firms that plan to merge, a firm suspected of an anti-competitive abuse or firms that are candidate subjects of regulatory intervention. Market definition is therefore an attempt to define a group of products, which are substitutable to such an extent that the firms producing them can be perceived as competing against each other and which therefore constrain each other's ability to increase prices.

---

[6] For instance, the Dutch Business Law Tribunal in November 2010 annulled the decision of the Dutch Regulatory Authority for Post and Telecommunications (OPTA) to regulate local cable TV companies Delta, UPC, KAIW and Ziggo claiming that the definition of the respective relevant retail markets was insufficiently motivated. LJN: BN4243, Board of Appeals for the business, AWB 09/536 to 09/539 and 09/541 to 09/548.

[7] See Europemballage Corporation and Continental Can Company Inc v. Commission of the European Communities, case 6-72 (1973) at para 14 : "The definition of the relevant market is of essential significance[…]".

[8] UPP was proposed by Farrell and Shapiro (2010). See instead Affeldt et al. (2012) for the extension of UPP to two-sided markets.

[9] In fact, it is not even clear that the 2010 US merger guidelines rule out market definition in merger cases, as they still state that "Agencies will normally identify one or more relevant markets" (US merger guidelines at para 4). See Lopatka (2011) for further discussion.

The most rigorous conceptual tool used to define the relevant market is the "small significant non-transitory increase in price test" (SSNIP test).[10] This test defines the narrowest market (collection of products plus geographic area) for which a single firm could sustainably raise prices or otherwise exercise market power.

Yet the test was designed for a single-sided market. Drawing from the economic literature on two-sided markets, we will argue that in a two-sided market, the test cannot be applied in its traditional form. We will then discuss how the same logic underlying the traditional test can be extended to a two-sided setting, while taking into account the two-sided nature of the market.

Relatedly, since in a two-sided market a firm sells two different products or services to two different groups of consumers (the so called two "sides" of the market), two additional questions naturally arise: whether one or two relevant markets need to be defined and whether the presence of another side of the market should influence market definition. We will argue that market definition should always take into account both sides of the market but that whether one or two relevant markets need to be defined depends on the type of two-sided market.

We will then compare our suggestion to the approach taken by competition authorities in recent decisions. Whereas our sample of cases is not exhaustive, it includes some well-known two-sided markets cases handled by the European Commission and some less well-known ones handled by National Competition Authorities, which we consider when indicative of the issues that may arise when defining two-sided markets.

We will show that divergence between our suggestions and the competition's decisional practice is due to three main reasons: a) the failure to fully incorporate the lessons from economic theory of two-sided markets, b) the desire to be consistent with previous practice and c) the higher data requirements and the higher complexity of empirical analysis in cases involving two-sided platforms. In particular, the failure to incorporate the lessons from the theory of two-sided markets manifests itself through the failure to recognize the crucial difference between two-sided transaction and non-transaction markets and through the use in cases concerning two-sided platforms of the argument that where there is no price, there is no market.

The paper proceeds as follows. Section 2 defines two-sided markets and makes a crucial distinction between two-sided transaction and non-transaction markets. The following three sections draw from the economics of two-sided markets to derive suggestions for market definition and analyse the recent decisional practice of competition authorities by looking at cases in two-sided markets in light of these suggestions. In particular, Section 3 considers whether competition and regulatory authorities should define one or two markets and why. Section 4

[10] In the US, the corresponding test is the "hypothetical monopolist test" (HM test). The two tests are slightly different. See Werden (2003) for a historical account of the ascent of the HM test.

explains why authorities should take into account both sides of the market in the assessment of the relevant market. Section 5 discusses whether and how authorities should perform the SSNIP test to define the relevant market. Throughout these three sections we compare our suggestions with current practice. Section 6 concludes.

2 TWO-SIDED TRANSACTION AND NON-TRANSACTION MARKETS

According to Evans (2003), a two-sided market is a market in which a firm acts as a platform: it sells two different products to two groups of consumers, while recognising that the demand from one group of consumers depends on the demand from the other group and, possibly, *vice versa*.[11] In other words, the demands on the two sides of the market are linked by *indirect network effects*[12] and the firm recognises the existence of (i.e. *internalises*) these indirect network effects. The buyers of the two products, however, do not internalise these effects, which are therefore called *externalities*. Note that, as recognised also by Rochet and Tirole (2003), this makes a two-sided market different from the well-known case of complementary products where both products are bought by the same buyers, who, in their buying decisions, can therefore be expected to take into account both prices.

Prominent examples of two-sided markets include (i) media markets, where firms sell content and advertising space, (ii) payment cards markets, where firms sell the use of a card to buyers and that of a point-of-sale (POS) terminal to shops, or (iii) online intermediaries, which sell their services to buyers and sellers. In media markets, advertisers' demand for ads on a media outlet increases with the number of consumers of content (viewers, readers, listeners, etc.), while viewers, readers and listeners might also be, positively or negatively, affected by the quantity of advertising. Similarly in payment cards markets, the more cardholders there are, the higher the demand from shops and vice versa. Card issuers such as American Express or VISA are well aware of this relationship between the two demands they face. Similarly, online intermediaries such as eBay know that the more buyers visiting their website, the more likely it is that sellers will use their services and vice versa. In fact, the most common business model on the Internet, as shown by the success of Google or Facebook, is to attract users with various free services and "sell" them to advertisers.

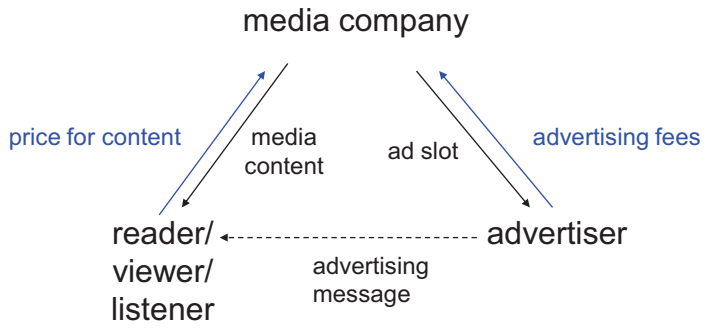
Different types of two-sided markets can be distinguished. Most important for the analysis of market definition in a two-sided market is the distinction

[11] For a market to be two-sided it is enough that one indirect network effect is present. For more discussion what makes a market two-sided and on identifying two-sidedness in practice, see Filistrucchi (2010) and Filistrucchi et al. (2013).

[12] Demand is characterized by a direct network effect when consumers' willingness to pay for a product depends on the number of other consumers (or the quantity bought) of the same product; demand is characterized by an indirect network effect when consumers' willingness to pay for a product depends on the number of consumers (or the quantity bought) of another product.

proposed by Damme et al. (2010) between two-sided *transaction* and *non-transaction* markets.[13] Two-sided non-transaction markets, such as most media markets, are characterised by the absence of a transaction between the two sides of the market and, even though an interaction is present, it is usually not observable, so that a per-transaction fee or per-interaction fee or a two-part tariff is not possible.[14] Two-sided transaction markets, such as payment cards[15], are instead characterised by the presence and observability of a transaction between the two groups of platform users. As a result, the platform is not only able to charge a price for joining the platform but also one for using it, i.e. it can ask for a two-part tariff.[16]

Fig.1 - An example of two-sided non- transaction market



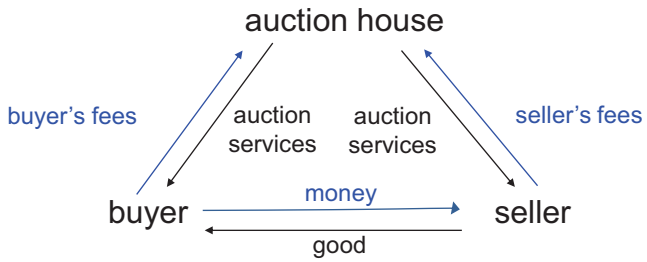
[13] This distinction was originally proposed by Filistrucchi (2008), who used however the terms "two-sided markets of the media type" and "two-sided markets of the payment cards type".

[14] Note that in a media market, an interaction is often present between the two sides of the market in that, for instance, a reader may read an ad placed by an advertiser. Such an interaction is even observable online (when one clicks on an online ad to open it) and in such a case the platform can charge for it. However, at best only a delayed transaction is present (when someone who saw an ad buys the advertised product) and this transaction is usually not identifiable (as it is impossible to say whether someone bought a product because he or she saw an ad), so that the platform is unable to charge a fee for it. It could be done, but very imperfectly, for instance by distributing discount coupons with a newspaper, which would allow the advertiser to keep track of those that collected the coupon and bought the advertised product. However, in the typical contract the advertiser would not pay the newspaper based on the number of used coupons only but more generally based on the readership of the newspaper. In addition, to incentivize people to use coupons, the seller needed to offer a discount. Only recently, using online tracking technology, it has become possible to charge advertisers for online transactions between an advertiser and an internet user which buys a product online after having seen an online advertisement. Such technological developments may eventually push some media markets to become two-sided transaction markets.

[15] Other two-sided transaction platforms are virtual marketplaces, auction houses and operating systems.

[16] Note however that the fact that a two-part tariff can be charged does not necessarily imply that it will be charged. Indeed both or either of a membership fee and a per-transaction fee can be charged. In fact, the crucial point is that a per-transaction fee *can* be charged. For example, for most payment cards in Europe and the US, cardholders pay at most an annual fee, while merchants pay a two-part tariff.

Fig.2 - An example of two-sided transaction market



Two-sided transaction markets are characterized by both *membership externalities* (or indirect network effects) and *usage externalities*. Membership externalities, which are also present in non-transaction markets, arise from joining the platform (buying a newspaper or placing an ad in a newspaper, holding a payment card or having a point-of-sale terminal, listing your product at an auction or attending an auction), whilst usage externalities arise from using the platform (paying or accepting payment with a card, selling and buying a product at an auction). As the value of joining the platform depends on the number (or more generally the demand) of customers of the other side, the benefit of using the platform similarly depends on the demand for usage by the other side. For instance, assuming that a customer holds a card and a shop has the corresponding point-of-sale terminal, even if this customer wants to pay by card, the merchant has to be willing to accept that card for that particular transaction and *vice versa*. Once again these externalities are not internalized by the users of the platform, i.e. the cardholder and the merchant. For instance, suppose a given merchant would benefit from being paid by card because she would not need to go to deposit cash and she would not have to face the risk of being robbed. A cardholder would not take that into account when offering to buy in cash or by card. He would only consider his own convenience.

As pointed out by Rochet and Tirole (2006), in a two-sided market, where two products or services are sold to two groups of customers, one can distinguish the price level and the price structure. The price level is (roughly) the sum of the two prices, while the price structure is (roughly) the ratio of the two prices.[17] In this respect, Rochet and Tirole (2006) define two-sided markets as follows:

[1717] We write "roughly" because prices on the two sides are in different units of measurement. For instance, in the case of a newspaper, the cover price is per copy of the newspaper, while the advertising tariff is per

> "*A market is two-sided if the platform can affect the volume of transactions by charging more to one side of the market and reducing the price paid by the other side by an equal amount; in other words, the price structure matters, and the platforms must design it so as to bring both sides on board*."[18]

In other words, according to Rochet and Tirole (2006), for a market to be two sided, it is sufficient that the price structure is non-neutral.

As explained by Filistrucchi, Geradin and van Damme (2013), whereas at first sight this definition might seem very different from the one proposed by Evans, in practice it is just broader. For the price level to be non-neutral, it needs to be impossible for the side that pays more to pass through the difference in its cost of interacting to the other side. If a complete pass-through were possible, the price structure chosen by the platform would not matter. The platform would not control the relative price charged to the two sides.

However, a complete pass-through can only take place if there is a transaction between customers on both sides of the market, such as a payment card transaction, or a transaction in a virtual marketplace (e.g., eBay). In markets where there is no transaction between end-users of the platform, no pass-through between the two sides can take place. Thus, given the presence of externalities between the demands on the two sides, the non-neutrality of the price structure necessarily holds and the platform has perfect control of the relative prices charged to the two sides.[19]

We will argue in the next three sections, which discuss how a competition authority should define the relevant market in cases involving two-sided platforms, that the distinction between two-sided transaction and non-transaction markets is crucial for the definition of the relevant market. We will compare our suggestions with current competition authorities' practice and show that one of the main reasons why theory and practice diverge relates to the failure to recognize the crucial difference between two-sided transaction and non-transaction markets.

3 DEFINING ONE VS. TWO MARKETS

3.1 Theory

As discussed above, in a two-sided market the two sides of the market are by definition linked by the presence of indirect network effects. As a result, firms

---

page or per column millimetre. Thus the price level is not simply the sum of the two prices, but rather the sum of the two prices *expressed in the same unit of measurement.* Again, in the case of newspapers the price level is the sum of the cover price and the per-copy advertising revenues. Similarly, the price structure is the ratio of the two.

[18] Rochet and Tirole (2006), p. 664-665.

[19] In practice, a two-sided market without a transaction is just an extreme case of a two-sided market: one where no pass-through is possible. At the other extreme, when the pass-through is complete, one finds a one-sided market. In the middle lie many different two-sided markets, those in which some pass-through is possible, although not complete.

can be seen as platforms that need "to get both sides on board"[20] in order to do business. The question then arises whether only one market needs to be defined, or if there are two.

One might be tempted to argue that, when one side of the market does not pay, only one market should be defined, namely, the one with paying customers. After all, we are used to thinking that in a market one party buys a product from another party. However, one of the first and most important contributions of the theory of two-sided markets is that giving away a product for free may be a profit maximizing strategy for a firm, even for a monopolist. The reason is that by giving away a product for free, a platform boosts the number of people receiving that product. Although it loses money on one side, it may recover this loss on the other side, making higher profits overall than if it were to sell on both sides at a positive price.[21] This is, for instance, the case with free newspapers, payment cards, and discos where women, but not men, get in for free. This is one reason why the argument "no price no relevant market" does not apply to a two-sided market. Another reason is that, as further discussed below, platform behaviour on the paying side of the market is likely to affect customers on the other side. For instance, a merger between free-to-air TV channels may raise the price of advertising but also affect viewers.

The question can thus be rephrased as whether there are two markets to be defined or only one market encompassing the two sides. For instance, when analysing a merger among newspapers, the question is whether there is a market for newspapers or there is a market for advertising (on newspapers) and a market for the dissemination of news. Similarly, in a case involving payment cards, the question is whether there is a market for payment cards services or a market for payment cards services to cardholders and a market for payment cards services to merchants.

One of the consequences of defining only one market is that a firm would be either on both sides of the market or on none. Defining instead two interrelated markets would allow a platform to be on one side of the market but not on the other.

Whether one or the other outcome is preferable depends on the type of two-sided market under consideration. Everyone would probably agree that a payment card company such as American Express is either in the relevant market on both sides or none, for the reason that either the transaction between the buyer and the merchant takes place using American Express services on both sides, or it does not take place through American Express. The analysis of a merger between two payment card platforms should thus consider whether cash transactions or PayPal exert competitive pressure on payment card companies on both sides.

However, in a case involving newspapers, a product might be in the relevant market on the advertising side but not on the readers' side.[22] For instance,

[20] Rochet and Tirole (2006), p. 665.
[21] See for instance Wright (2004) and Parker and van Alstyne (2005).
[22] See Evans and Noel (2005).

suppose that people do not regard TV and newspapers as substitutes because they read the latter on the metro going to work and watch TV at home in the evening. Assuming that advertisers are interested in reaching each person only once during a day, they will tend to regard TV and newspapers as substitutes. TV would then be in the same relevant market as newspapers on the advertising side but not on the readers' side. The analysis of a merger case involving newspapers should then consider that TV exerts competitive pressure on newspapers in the market for advertising but not in the market for content.

We submit that the crucial element distinguishing a newspaper market from a payment cards market is that in the latter a transaction is present between so-called end-users, i.e. between the customers on the two sides of the market. Whether one should define a single market or two interrelated markets depends on whether we are dealing with a two-sided transaction market or a two-sided non-transaction market.[23]

To sum up, our first suggestion is

Suggestion 1: In two-sided non-transaction markets, two (interrelated) markets need to be defined.

In two-sided transaction markets, only one market should be defined.

In fact, this topic has been addressed *en passant* by Wright (2004), who suggested that one might want to define separate markets on each side or only one market depending on whether the platforms charge membership fees or transaction fees. He argued that, with pure transaction fees, having separate markets would not seem to make much sense, since platforms collect revenues from each side simultaneously for a given transaction. He claimed, for instance, that it would not make sense to talk of a stand-alone rental agency that controlled the market for tenants, but in which there was strong competition among rental agencies for landlords.[24] We argue here that the crucial feature is the presence and observability of a transaction among end-users, which allows platforms, such as rental agencies, to charge fees per transaction. Indeed, even if a rental agency charged a fixed membership fee, irrespective of the number of houses you buy with its intermediation, the transaction still takes place either through that rental agency or not.[25]

In fact, as already mentioned, in two-sided transaction markets end-users on the two sides can be charged both a fixed and/or a per-transaction fee. In practice, the former is the price paid for joining the platform, the latter is the price paid to

[23] See Filistrucchi (2008).
[24] Wright (2004), page 62.
[25] Of course, in such a hypothetical case, tenants might have a different rental agency than the one of the renter. Then, the two agencies would need to agree in order for the transaction to take place with their intermediation. Note that such a case is similar to the one of payment cards: four-party systems where a cardholder has a relationship with his own bank (the issuer bank) and the merchant may have a relationship with a different bank (the acquirer bank). When the issuer and the acquirer bank do not coincide, an agreement between the two banks is necessary to allow the transaction to take place through the payment card. We discuss market definition in cases involving four-party payment systems in a specific section.

use the platform. In most cases, consistently with current practice regarding after-markets[26], one should define a single system market, comprising both the primary market for membership and the secondary market for use, since it is usually the case in two-sided transaction markets that "the likely expenditure on the secondary product is a relatively high proportion of the primary product's price"[27] and customers "anticipate the cost of future necessary purchases of the secondary market product when buying the primary product".[28] The only differences with respect to a single-sided market are the presence of indirect network effects between the primary markets on the two sides and the fact that the secondary market is a transaction market linking the two-sides.[29] As discussed above, these differences imply that a single system market cannot but comprise both sides of the market.

One may wonder whether defining a single market in the case of two-sided transaction markets would lead to a relevant market comprising products which are not substitutes for each other. For instance, a single market for services provided by rental agencies would include both services to the tenants and services to the landlords. A landlord trying to rent a flat would not usually be interested in visiting flats which are up for rental. Similarly, for payments card services, a cardholder would not usually consider getting a POS terminal instead of a payment card and a merchant would not consider getting a payment card instead of a POS terminal.

Yet, in all these cases, defining a single market implies defining the market for services to a transaction. The product that is offered is the possibility to transact through the platform, be it the rental agency or the payment card company. Candidate substitute products are not only other platforms which offer, to both sides, the possibility to transact but also non-intermediated transactions such as, for instance, a direct rental or a cash payment.

Moreover, as noted by Rooney and Park (2007), the suggestion to define only one relevant market for cases involving two-sided transaction markets seems also consistent with some of the case law in the US. More precisely, although relevant markets are usually defined as comprising substitutable products, single markets have also been defined in cases of complementarities in demand, such as for instance in banking services or in hospitals services.[30] In *United States vs. Grinnel*, the US Supreme Court addressed the point explicitly:

> "*The District Court treated the entire accredited central station service business as a single market, and we think it was justified in so doing.*

[26] See for instance Motta(2004) for a discussion of aftermarkets.

[27] See OFT (2004) , at para 6.5.

[28] See OFT (2004) , at para 6.6.

[29] Note that, customers on the two-sides are fully aware of the transaction nature of the market. For instance, a merchant knows that by adopting a POS terminal the use of the card will depend also on the preferences of its clients.

[30] See for instance United States v. Philadelphia National Bank - 374 U.S. 321 (1963), in which the US Supreme Court argues in favour of defining "cluster" markets for commercial banking services, or United States v. Long Island Jewish Medical Center, 983 F.Supp. 121, 140 (E.D.N.Y. 1997), in which the Court of Appeal Court for the Eastern District of New York, consistently with previous practice, defines the product market to be the general acute care inpatient hospital services.

Defendants argue that the different central station services offered are so diverse that they cannot, […] be lumped together to make up the relevant market. For example, burglar alarm services are not interchangeable with fire alarm services. […] We see no barrier to combining in a single market a number of different products or services where that combination reflects commercial realities. To repeat, there is here a single basic service -- the protection of property through use of a central service station -- that must be compared with all other forms of property protection".[31, 32]

Although, as explained in Section 2, two-sided markets are different from markets for complementary products, the argument above would seem to extend to two-sided transaction markets, where the "single basic service" is in fact facilitating the transaction.

3.1.1 The market for payment cards

An interesting case of a two-sided transaction market is the payment card market. In such a market, two types of payment card systems can be identified: 3-party payment card systems and 4-party payment card systems.[33] In the former system, a payment card company directly provides POS services to merchants and issues cards to buyers (Fig. 3). In the latter system instead banks and other members of a payment card association issue cards and provide POS services.[34] Hence, in general, a cardholder buys card services from a bank, while a merchant buys them from another bank. (Fig.4). As a result, when a cardholder buys a product from a shop, the transaction needs to be cleared at the level of the two banks. Membership of the payment card system implies a guarantee that the transaction is cleared, so that the merchant receives the payment of the cardholder. The system works similarly to traditional checks. However, whereas the latter have always been cleared *at par* (i.e. at no price) and the costs of clearing have been charged indirectly to the buyer and the seller (e.g. through higher fees on bank accounts), in 4-party payment systems an interchange fee is often paid per transaction from one side to the other, in most cases from the bank of the merchant to the bank of the cardholder. Clearly, such an interchange fee constitutes a component of the marginal cost of serving customers on its side of the market for the bank that pays it, in most cases the bank of the merchant. As such, on the one hand, it constitutes also a lower bound for the per transaction fee charged to the merchant for the transaction; on the other hand, it allows to influence the price structure. Most payment card associations traditionally set a default interchange fee, which is applicable unless the banks

[31] United States v. Grinnell Corp. - 384 U.S. 563 (1966) at para. 571-572.

[32] The Supreme Court rulings in *United States v. Philadelphia National Bank* and *United States v. Grinnel* are cited for instance in Image Technical Services, Inc. v. Eastman Kodak Co., 125 F.3d 1195, 1203 (9th Cir. 1997), at 1204. There, the U.S. Court of Appeals for the Ninth Circuit in Kodak upheld two all-parts markets, one including all replacement parts for Kodak photocopiers and the other including all replacement parts for Kodak micrographics equipment. The defendants had unsuccessfully argued that since replacement parts were not interchangeable, the relevant markets consisted of the market for each individual part for Kodak photocopiers and each individual part for Kodak micrographics equipment.

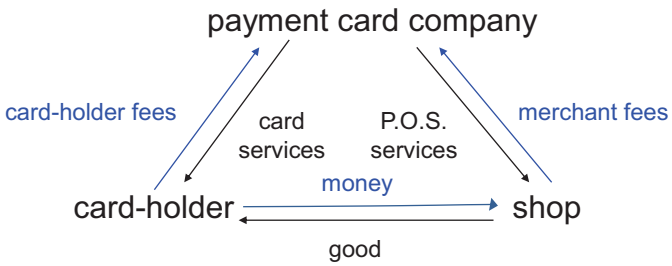
[33] Examples of 3-party systems are American Express and Diners. Examples of 4-party systems are Mastercard (and Maestro), Visa (and Visa Electron) and many national debit card schemes. Mastercard and Visa are the credit card brands, whereas Maestro and Visa Electron are the debit card brands.

[34] For an early model of a 4-party payment system, which applies also to checks, see Baxter (1983). For a more recent model of 4-party payment scheme, see Rochet and Tirole (2002).

involved reach a different agreement. We will see in the next section that, as the use of payment systems increased, the setting of interchange fees has become a typical case of concern for antitrust authorities. As a result of regulatory and competition policy interventions, payment card associations transformed themselves into payment card companies, giving rise to a fifth system participant. Hence, a distinction is often made between 4-party and 5-party systems.[35] See Fig. 4 and 5.

According to our suggestion, irrespective of whether the system is a 3-party system or a 4-party system a single relevant market must be defined, the market for transactions which take place through the payment system, which may or may not include other payment systems and possibly direct transactions. In such a relevant market 3- and 4-party systems may coexist if they are substitutable enough from the point of view of both buyers and sellers.

Fig.3 - A three-party payment card scheme



[35] For simplicity, since the distinction is not relevant for most of our arguments, we will use the term 4-party system to indicate both 4- and 5-party systems.

Fig.4 - A four-party payment card scheme

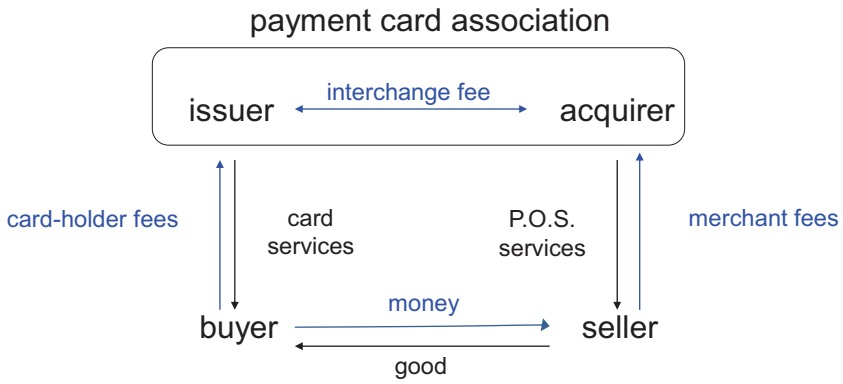
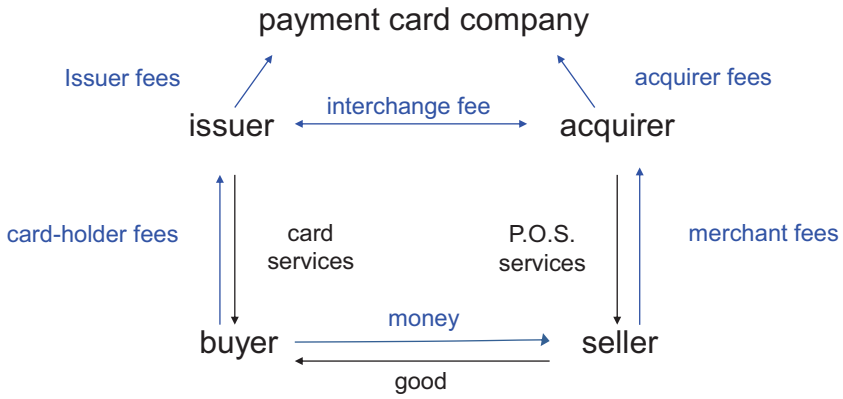


Fig.5 - A five-party payment card scheme



5

However, in a 4-party system, it is possible to distinguish inter-brand (or better inter-system) competition and intra-brand (or better intra-system) competition.[36] The former takes place when different payment systems compete for clients; the latter instead takes place when different banks compete to issue cards or provide POS terminals of a given payment system.

[36] Inter-brand and intra-brand competition were defined by the US Supreme Court as follows: "Interbrand competition is the competition among the manufacturers of the same generic product. [...]. In contrast, intrabrand competition is the competition between the distributors [...] of the product of a particular manufacturer." (*Continental T.V. Inc. v. Sylvania*, 433 U.S. 36, 52 n.19 (1977)).

In a 4-party payment system a payment card association sells its card services through a bank or another financial institution. The situation is thus reminiscent of a vertical one where different car producers compete for clients through retailers, which may sell cars of different brands. In such a market traditionally both inter- and intra-brand competition have been assessed with regard to a relevant market defined on the basis of consumers' preferences[37]. The difference is that, in the case of payment cards services, the market is two-sided and the payment card association needs to sell to both cardholders and merchants. Hence, inter-system and intra-system competition need to be assessed taking into account both sides of the market. This assessment can be carried out with regard to a relevant market defined, according to our suggestion 1 above, as the market for transactions which take place through the payment system.

3.2 Practice

We now discuss whether our suggestion 1 is in line with past and current practice in cases involving two-sided platforms. As already mentioned, among two-sided transaction markets are those for payment cards services, auction houses, video game consoles and operating systems. Media markets on the other hand are two-sided non-transaction markets. We discuss here cases relating to both types of markets, starting from transaction markets.

3.2.1 Transaction markets

There are a number of recent cases in which the competition authorities correctly defined only one relevant market when platforms operating in two-sided transaction markets where involved.

In *Travelport/Worldspan*[38], the Commission explicitly acknowledged the two-sided nature of the market by noting that a Global Distribution Service[39] is a two-sided platform allowing Travel Service Providers and Travel Agencies to interact.[40] The European Commission defined only one relevant product market for "*electronic travel distribution services through a GDS*"[41], which again appears correct given that the GDSs are two-sided transaction platforms.[42]

---

[37] See Brenkers and Verboven (2006) for a market definition exercise conducted by implementing a flexible SSNIP test in the car market.

[38] Case No COMP/M.4523 - TRAVELPORT/ WORLDSPAN The merger, cleared in 2007, concerned a concentration between two providers of electronic travel distribution services. These are platforms which allow transactions between travel agents and travel service providers.

[39] A global distribution service (GDS) is a tool which allows travel agents (TAs) to get information and make reservations mostly for airlines, cars and hotels from travel service providers (TSPs).

[40] Para 10-11.

[41] Para 10.

[42] The case, however, raises an interesting issue of terminology. According to the Commission, on the upstream side of the market, a GDS mainly offers TSPs access to TAs and ultimately end-consumers, while on the downstream side of the market, TAs profit from a GDS to access TSPs. It is somewhat confusing that the Commission identifies one side of the two-sided market (the TSP's side) with the upstream market and the other side of the market (the TAs' side) with the downstream market. While it is true that TSPs are the upstream firms and TAs are the downstream firms in the market for travel services, these are not the two sides of the two-sided market. In reality, the two-sided market is the one for intermediation services to TSPs on one side and to TAs on the other side. One can better see the distinction by observing that the market for travel services could exist also if the intermediaries were not present. This is similar to the case of a payment card company providing the services of a POS terminal to merchants (the sellers) and those of a

Although the Commission did not reach a definitive conclusion as to the exact scope of the relevant product market[43] in *Google/Doubleclick,*[44] it correctly identified the two-sided nature of some online advertising intermediation services.[45] The Commission did not envisage the existence of separate markets for advertisers and publishers, but on the contrary assessed the reality of an intermediation market, which it considered separate from the direct sales channel. Even though the decision does not provide an explicit explanation for why a single market for intermediation services was defined, the definition of a single market appears correct in light of the transactional nature of these intermediaries.

Although it correctly defined a single market for online intermediation, the Commission, however, missed the point that other two-sided markets were at stake. The Commission considered the online advertising market, but did not recognize that the websites hosting such advertising, including those run by Google itself, are two-sided non-transaction platforms that cater not only to advertisers, but also to website viewers, and in some instances to content providers (Fig. 7). Arguably, the Commission should have also defined one or more non-transaction markets for users of (Google) websites (Fig 6) or at least discussed why it thought that such additional markets were not relevant to the decision. Had it done so, it might have realized that the acquisition of Double-Click potentially allowed Google to acquire information on online users data that could be used to improve targeting of advertising also on its own websites. Interestingly, such an issue was raised in the dissenting statement of commissioner Jones Harbour in the decision of Federal Trade Commission on this merger. [46]

card to cardholders (the buyers). In that case, the market where the cardholder and the merchant transact, for instance when the former buys a pair of shoes and pays by card, is not a two-sided market.

[43] In particular, the decision did not try to establish whether there existed separate markets for online search advertising and for online non-search advertising. The answer to the question might instead be crucial to the outcome of the investigation into Google's alleged abuse of dominance opened by the EU Commission at the end of November 2010.

[44] Case No COMP/M.4731 – Google/ DoubleClick. The merger between Google and DoubleClick was approved in 2008.

[45] Google/Doubleclick at para.20-23.

[46] Google/DoubleClick, Dissenting Statement of Pamela Jone Harbour, F.T.C. File No. 071-0170.

Fig.6 - Google as a multi-sided platform active in two-sided transaction and non-transaction markets

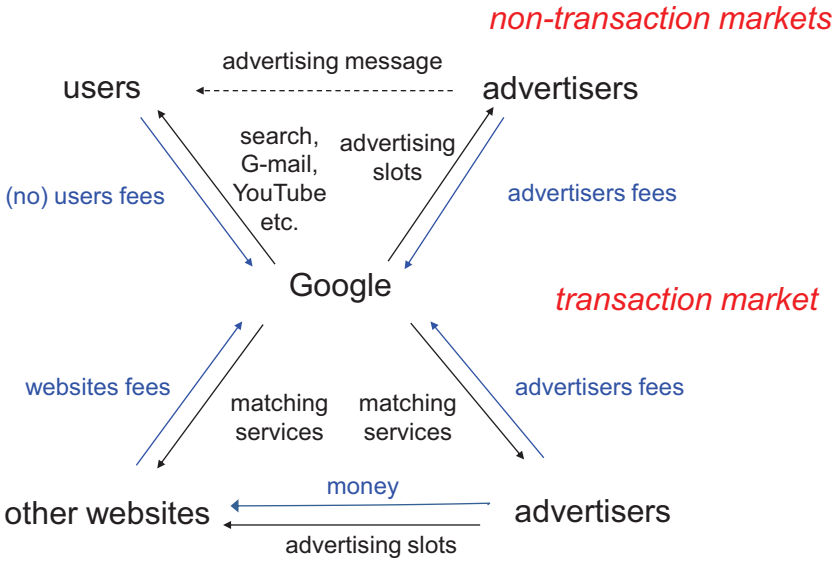
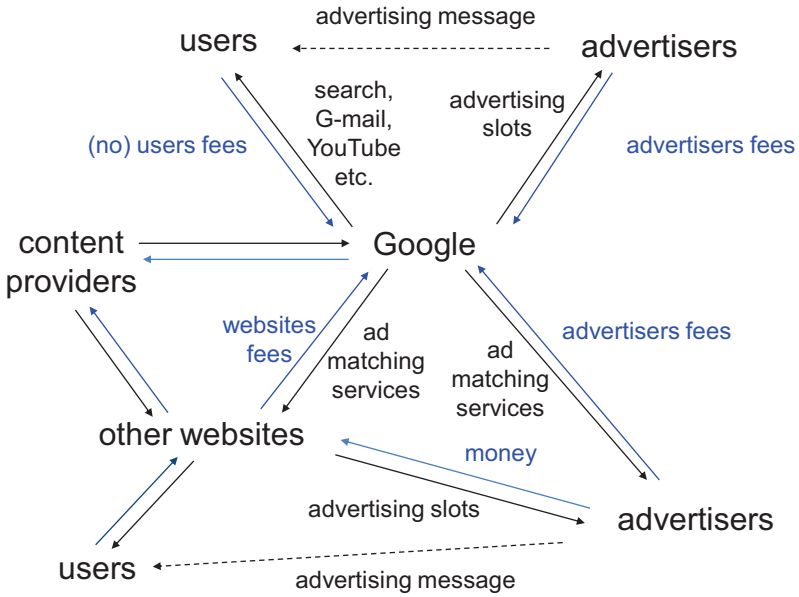


Fig.7 - Google as a multi-sided platform: the more complex picture



At the level of national competition authorities, the most explicit discussion of whether one or two markets need to be defined is found in Bloemveiling Aalsmeer/FloraHolland . In this case, the Dutch competition authority, NMa, defined only one relevant market for the trade in ornamental horticultural products, which comprised both sales through the auction houses and sales through alternative channels, including direct sales. The NMa first explicitly acknowledged the two-sided nature of the market and recognized that it was important whether the two sides of the market for auction services for

ornamental horticultural products were considered to constitute separate relevant product markets or whether they were to be included in a single relevant market. Interestingly, it then referred to the way the relevant market was defined in Visa International to justify its decision to define a single market. As in the case of credit card networks where the European Commission recognized that demand from both consumers and retailers must be taken into account, since the choice of payment method is determined by both sides jointly, the NMa considered that for auction services of ornamental horticultural products both the demand from buyers and the supply by growers needed to be taken into account when determining demand for the services offered by auction houses and defining the relevant product market. Even though some of the NMa's arguments would seem to imply that for all two-sided markets a single market encompassing all sides should be defined , the definition of only one relevant market seems again correct in light of the fact that auction services are a two-sided transaction market.

3.2.1.1 The market for payment cards

While in the above discussed cases involving two-sided transaction markets only one relevant market was defined, in cases involving four-party payment cards schemes, unlike earlier decisions in the US and Europe, which correctly defined a single market, competition authorities in Europe defined more than one market.

Much before the theory of two-sided markets had been developed, the District Court for the Southern District of Florida, in *Nabanco v. Visa*[47], defined the relevant market in which Visa operated to be the market for all payment systems. More recently, however, in *Visa and MasterCard*[48], the District Court for the Southern District of New York and the Court of Appeals of the Second Circuit, defined two relevant markets, a market for credit cards and a market for credit card network services, the latter being for example authorization, settlement, and clearance of transactions.

Whereas in *Visa International*[49]*and Visa International-MIF*[50] the Commission appears to have correctly defined a single market for transactions by payment

[47]NationalBancard Corp. v. VISA, U.S.A., 596 F. Supp. 1231 (S.D.Fla.1984). NaBanco filed suit against Visa U.S.A. alleging that Visa violated Section 1 of the Sherman Act by fixing the interchange fees. The District Court for the Southern District of Florida found that the pro-competitive effects created by the interchange fee exceed their anti-competitive effects. The US Court of Appeals upheld the decision,

[48] U.S.A. VISA U.S.A., INC., MASTERCARD INTERNATIONAL, INC., and VISA INTERNATIONAL, INC. .US. District Court Southern District of New York 98 Civ. 7076 (BSJ). The DOJ brought suit against Visa and MasterCard, alleging that the associations' rules that forbade Visa and MasterCard member banks from also issuing American Express or Discover cards were exclusionary. The DOJ prevailed both before the District Court for the Southern District of New York in 2001 and before the Second Circuit Court of Appeals in 2002, which required the associations, among other things, to abandon the exclusionary rules.

[49] Case No COMP/29.373 — Visa International OJ L 293, 10.11.2001. The case concerned the possible restrictions of competition stemming from a series of rules and regulations concerning the Visa association and its members. The Commission found these rules did no restrict competition.

[50] Case No COMP/29.373 — Visa International — Multilateral Interchange Fee OJ L 318, 22.11.2002. The case concerned the setting of fall-back multilateral interchange fees (MIFs) applicable to cross-border transactions within the EEA by Visa. The Commission found that the rules on setting cross-border interchange fees represented a collective agreement between competitors (Visa member banks) that restricted competition among acquiring banks and among issuing banks with respect to the prices they charged their respective customers. Hence these rules fell within the scope of art. 101. The Commission

cards between cardholders and merchants based on both merchants' and cardholders' preferences[51] and mainly discussed inter-system competition with regard to this "upstream" market[52], it also identified two-additional "downstream" markets: the issuing and acquiring markets,[53] where "intra-system" competition takes place. While intra-system and inter-system competition could have both been assessed with regard to the single market for transactions, the Commission approach would have been consistent with established practice in cases involving aftermarkets, if it had explicitly claimed that: a) the issuing and acquiring markets were the primary (interrelated) markets and the single market for transactions was the secondary market; b) primary and secondary markets needed to be considered separate relevant markets.

Unfortunately, in the more recent *MasterCard*[54] and *Visa Europe* cases.[55] the Commission substantially changed its approach to market definition. It distinguished again two types of markets. But this time the "upstream market" or "network market" was identified with the market in which competition between different payment systems takes place to persuade *financial institutions* (rather than merchants and cardholders) to join their network and on which they provide services to these institutions. The Commission considered this the "upstream market" or "network market", where inter-system competition takes place. The other was, as in the previous decisions, the market in which competition between financial institutions (usually banks) for card-related activities (issuing and acquiring) takes place. Within this downstream market, the Commission defined two relevant markets, one for acquiring and one for issuing services.

Notably, in *MasterCard*, the Commission recognized the two-sided nature of the market but explicitly refused to define a single market encompassing both card-holders and merchants, stating that: "*Two-sided demand does not imply the existence of one single 'joint product' supplied by a 'joint venture'".* The argument was threefold. First, the definition of a single market would not be able to take into account the complex vertical structure of the market and would not therefore be suitable to assess intra-system competition. Second, such an approach would not acknowledge that the relevant product is not only payment

accepted that the interchange fees could bring about efficiencies and thus qualify under art. 101(3), provided Visa committed to a change in the method of setting its cross-border interchange fees.

[51] Visa International, at para. 46. Visa International MIF, at para.46.

[52] The Commission considered this was the upstream market and called it also the "network market".

[53] The Commission considered these the "downstream markets".

[54] Case COMP/34.579 — MasterCard, Case COMP/36.518 — EuroCommerce, Case COMP/38.580 — Commercial Cards, OJ C 264, 6.11.2009. The case, decided in 2007, concerned the setting of fallback MIFs applicable to cross-border transactions with MasterCard within the EEA. The Commission found it restricted competition between acquiring banks to the detriment of merchants (and subsequently purchasers) and it ordered the multilateral cross-border fee to be repealed. In 2008, MasterCard appealed the decision to the Court of First Instance. In April 2009, MasterCard agreed to temporarily reduce its multilateral interchange fee (by changing its methodology for calculating MIF) in order to avoid a non-compliance decision from the Commission. In 2012 the General Court upheld the Commission's decision.

[55] Case COMP/39.398 — Visa Europe MIF. The case, decided in 2010, concerned the setting of MIFs for cross border and certain domestic point of sale (POS) transactions with VISA, VISA Electron and V PAY consumer payment cards within the EEA. Visa Europe offered commitments with respect to MIF for debit cards, which were eventually accepted by the Commission.

services, but also other acquiring and issuing services. Third, such an approach would be inconsistent with previous practice in cases concerning two-sided platforms, such as newspapers.

In our opinion, all the three arguments are unconvincing. First, the Commission's desire to be consistent with previous practice in the newspaper market overlooked the fact that while payment cards are transaction markets, newspaper markets are two-sided non-transaction markets. As we argued above, this difference warrants a differential treatment in market definition. Second, the additional issuing and acquiring services (such as accounting records on sales by payment cards offered to merchants) are mostly ancillary to the main service of allowing the transaction. Third, and more importantly, by refusing to define a market for transactions, the Commission completely misrepresented the "complex vertical structure of the market". In fact, the Commission seems to propose a structure of the market similar to the 5-party system described in Fig. 5.1 but without the final transaction among end-users. In practice, when defining the relevant market, the Commission focused only on the adoption decision, assuming it is made by banks and not by customers, and completely disregarded the importance of the decision by end-users to use a card for a transaction.

Focusing on banks rather than end-users had as a consequence that the Commission failed to discuss, for instance, whether end-customers multi-home in adoption[56], i.e. whether cardholders have more than one card or merchants have more than one POS terminal. The question would have been relevant because, to the extent that customers multi-home in adoption, the adoption of the system by a customer does not guarantee that the system is used and generates revenues from use. In such a situation, identifying the market for adoption as the market on which competition takes place is misleading. The case is similar to that of telecommunications operators which offer phone services, potentially competing both to sign up customers and to make customers phone through their system (only here the market is two-sided). In the presence of customers' demand for multi-homing in adoption, e.g. if cardholders desired more than one card or people subscribed to different operators, then competition would be fierce for having customers use the system.[57] In such a situation, failing to define a market for use implies failing to take into account major competitive constraints faced by the firm.

Focusing on the adoption decision thus also implied that the Commission could not properly assess whether 4-party systems such as *Visa* and *MasterCard* competed for use against each other, against 3-party systems such as American Express or against national debit card schemes.

---

[56] Customers are said to "multi-home", in membership (or adoption) or in usage, when they respectively join or use more than one platform; they are said instead to "single-home" if they respectively join or use only one platform.

[57] Interestingly to this regard, Rysman (2007) has documented that in the US people hold several payment cards (i.e. multi-home in adoption of a system), but mostly use only one card (i.e. single-home in usage of a system). This suggests that competition for customers' use may be important. End-users behavior may, however, vary country by country.

Finally, focusing on the adoption decision and disregarding the usage decision, appears at odds with the fact that most of the revenues of payment cards derive from transactions and ignores that the central issue of the case was the interchange fee, which is a *per transaction* fee. Implicitly, the Commission argued that such a fee affected pricing decisions by banks (e.g. the merchant discount) without affecting end-users choices.

Similarly to the practice at the EU level, in *MasterCard* (2005)[58], the UK Office of Fair Trading (OFT) explicitly refused to define a single market encompassing both cardholders and merchants: "*The OFT notes that ultimate demand for credit and charge card transactions is two-sided, from merchants on one side and from cardholders on the other side. […] However, the OFT does not accept the view of the Parties that the presence of two-sided demand makes it necessary to consider a single relevant market based upon the card scheme as a whole*."[59] Hence, while the OFT defined a market for acquiring services and one for issuing services, it did not define a network market.

In contrast, the OFT defined a third market for the supply of services provided between issuers and acquirers for the completion of purchases made by using MasterCard. Such a market was called a "wholesale" market. In practice, the OFT argued that, in a 4-party payment system, there is a market for the clearing of a transaction and related services between the issuing and the acquiring bank. The OFT considered the interexchange fee as a price that an acquirer pays to an issuer for the latter to provide "the services necessary to complete the transaction".[60]

In our opinion there is no such market because, once the transaction by the payment card of a given system has taken place, one of the banks involved holds a credit and one holds a debit and only these two banks can clear the transaction. In this respect, the OFT's argument that the situation is not different from other wholesale markets where a contract for inputs has already been agreed is misleading, since in the market under consideration the demand for inputs (i.e. for clearing services) is not only derived from the demand for output (i.e. from the demand for transactions), but is also conditional on the output being sold (i.e. on the transaction taking place) and, more importantly, the choice of the input supplier is determined by the parties that transact. It is as if in a car market, when selling a car to a customer the customer himself determined who the inputs should be bought from. In the absence of a previous agreement, the sale of the car would lock-in the manufacturer in a bargaining game with the suppliers of the inputs. The implied uncertainty would prevent the manufacturer from selling the car in the first place, particularly if inputs suppliers were so numerous that ex-ante bilateral contracts with all of them were unfeasible. This is the situation in a payment cards system when the payment card association sets a fall-back interchange fee which is valid in the absence of bilateral contracts

[58] OFT, Masterard, Case No. CA98/05/05
[59] OFT Mastercard, at para. 162.
[60] OFT Mastercard, at para. 172.

between the issuing and the acquiring banks.[61] Interestingly, a similar conclusion with regard to the absence of such a wholesale market was reached by the Commission in Visa MIF.[62]

Overall, it would seem that in most recent cases involving two-sided transaction markets, competition authorities defined one single market, encompassing both sides of the market, thus in line with our suggestion 1. It is only when 4-party payment card schemes are involved that competition authorities fail to define a single market. This appears to be due to the complex vertical structure of the market and also to the desire to be consistent with previous practice. However, it has resulted in the failure to take into account the role of cardholders and merchants in the choices of whether to use a payment system and of which payment instrument to use.

3.2.2 Non-transaction markets

We now turn to the observed practice in cases involving two-sided non-transaction markets. As claimed above, in media markets such as newspapers or TV, which are two-sided non-transaction markets, two interrelated markets, one for each side, should be defined.

There are some cases in which the competition authorities correctly defined two separate markets.

For instance, well before the theory of two-sided markets was formulated, the Supreme Court, in *Times-Picayune Publishing Co. v. United States*[63], acknowledged that "every newspaper is a dual trader in separate though interdependent markets; it sells the paper's news and advertising content to its readers". Such a decision set a precedent and is cited, for instance, in *Community Publishers, Inc. v. Donrey Corp.*[64], where both a market for readers and a market for advertisers were defined and considered interdependent. The court ruled that "*[i]n this case, the relevant product market for antitrust purposes is the local daily newspaper.*

---

[61] Although at first sight one might be tempted to see the "wholesale" market defined by the OFT as an aftermarket, the situation is in fact very different. First, in the case of aftermarkets the buyer is the same in both the primary market and the after-market. So, for instance, the potential buyers of ink-jet cartridges are those who bought an ink-jet printer. In contrast, in the case of 4-party payment cards the transaction takes place between the buyer and the seller. Once a card transaction has taken place, it has to be cleared by the two banks involved. The buyer and the seller play no role in the clearing. Second, in the case of after-markets the transaction in the primary market may take place even in the absence of a transaction on the after-market. Hence, for instance, a buyer of an ink-jet printer may decide not to buy a second ink-jet cartridge after she bought one together with the printer. This is not the case for 4-party payment schemes, since the clearing of the payment has to automatically follow the transaction.

[62] Visa MIF at para. 79.

[63] *Times-Picayune Publishing Co. v. United States*, 345 U.S. 594, 610, 73 S.Ct. 872, 881, 97 L.Ed. 1277 (1953).

[64] The case (Community Publishers, Inc. v. Donrey Corp., 892 F.Supp. 1146 (1995), United States District Court, W.D. Arkansas, Fayetteville Division, June 30 1995), decided in 1995, concerned the purchase of a local daily newspaper, the Northwest Arkansas Times, by NAT, L.C. Both the government and private plaintiffs contended that this purchase would substantially lessen competition, since NAT, L.C., had significant shareholders in common with defendant D.R. Partners d/b/a Donrey Media Group, which owned a competing local daily newspaper, the Morning News of Northwest Arkansas. The United States District Court concluded that the acquisition was unlawful and that rescission was the appropriate remedy. The Court of Appeal for the 8th Circuit upheld the decision (Community Publishers, Inc. v. DR Partners, 139 F.3d 1180 (1998), United States Court of Appeals, Eighth Circuit, February 12, 1998).

This market is in fact composed of two markets: one for readers and one for advertisers."[65]

Turning to Europe, in *GIMD/Socpresse,*[66] the Commission defined a market for readers and a market for advertisers. Although the exact scope of the relevant product market on the advertising side was left open, on the readers side two relevant markets were considered to be affected by the merger, the market for general and political magazines and the one for economic and financial magazines.

Turning then to national competition authorities, in both the *Holtzbrinck*[67] and the *Springer/ProSieben/Sat1*[68] cases, the Bundeskartellamt defined two different markets: one for readers and one for advertisers. Interestingly, in both cases, the scope of the relevant product market was different on each side. In *Holtzbrinck*, the market for readers was defined as the market for daily regional subscription newspapers in Berlin. In *Springer/ProSieben/Sat1*, the Bundeskartellamt made a distinction between over-the-counter and subscription newspapers and defined the readership market as the national readership market for over-the-counter newspapers. In both cases, the market for advertisers was defined more broadly, as including both over-the-counter and daily subscription newspapers and also advertising-only publications. As discussed above, one of the reasons behind our suggestion to define two separate markets in case of two-sided non-transaction markets is the possibility that a product competes with those of a two-sided platform on one side of the market but not on the other side.

Nevertheless, there are also cases involving two-sided non-transaction markets where competition authorities failed to define a relevant market on each side. The main reason appears to be the observation that on one side of the market

---

[65] United States District Court, W.D. Arkansas, Fayetteville Division, US vs. Donrey Media Group, Nos. 95-5026, 95-5048, para 5.

[66]Case n° COMP/M.3420 - GIMD / SOCPRESSE. This merger was cleared subject to remedies by the European Commission in 2004. The case concerned the takeover of Socpresse by GIMD (Groupe Industriel Marcel Dassault). GIMD was active in different fields but also owned magazines. Socpresse owned national and regional daily newspapers and magazines. The main issue in the case was the increased concentration due to the merger in the market of economic and financial magazines in France. GMID would gain control of Le Journal des Finances and Finances Magazine while it already controlled L'Expansion, La Vie Financière and Mieux Vivre Votre Argent. The remedy imposed was the divestiture of La Vie Financière.

[67] BUNDESKARTELLAMT B 6 - 22121 - U - 98/02. This merger was blocked by the Bundeskartellamt in 2002. Had it been cleared, Holtzbrinck KG would have acquired the Berliner Verlag GmbH & Co, the G+J Berliner Verlag GmbH and 45% of the shares of Berlin Online Stadtportal GmbH. The decision focused on the markets for regional daily newspapers and city magazines in Berlin. The merger would have led Holtzbrinck to own the daily newspaper "Berliner Zeitung" while it already owned, the daily newspaper "Tagesspiegel". The acquisition would have also led Holtzbrinck to own both Berlin city magazines "Zitty" (already owned by Holtzbrinck) and "Tip" (owned by Gruner+Jahr).

[68] BUNDESKARTELLAMT B 6 - 92202 - Fa – 103/05. This merger, which was blocked by the Bundeskartellamt in 2006, concerned the takeover of ProSieben/Sat1 by Axel Springer. ProSieben and SAT1 are two of the biggest German private TV channels while Axel Springer is the biggest German newspaper and magazine publisher. The main issue identified by the Bundeskartellamt was that the TV advertising market was basically a duopoly of ProSieben/Sat1 and Bertelsmann (RTL), while the BILD Zeitung owned by Axel Springer was the only substitute for TV advertising with a similar reach. Thus, according to the Bundeskartellamt, if Axel Springer acquired ProSieben/Sat1 there would no longer be any significant competitive pressure from BILD on TV advertising prices, which would strengthen the duopoly of Bertelsmann and ProSieben/Sat1 in the TV advertising market where competition was already lacking pre-merger and where pricing policies were very similar.

the product is given away for free and the claim that, as a consequence, there is in fact no market on that side.

For instance, in *KinderStart vs Google*[69], the Court for the Northern District of California argued that the claimants "*cited no authority indicating that antitrust law concerns itself with competition in the provision of free services. Providing search functionality may lead to revenue from other sources, but KinderStart has not alleged that anyone pays Google to search*"; hence, "*the search market is not a 'market' for the purposes of antitrust law*".[70]

Similarly, in *BSkyB/Kirch Pay TV*[71] the Commission defined two product markets, the market for Pay-TV and the market for interactive digital TV, without distinguishing however the advertisers' and viewers' sides. More generally, it did not recognize the two-sided nature of these two markets and focused only on substitutability between the products for viewers. The main reason was the claim that PAY-TV stations did not sell advertising slots to advertisers.

While it is by now clear that PAY-TV stations can sell advertising, the claim that there needs to be a positive price (the so-called "trade relationship" in the language of the Commission) for the effects of a merger on that side of the market to be considered seems to have started a trend in decisions in the EU regarding media markets. For instance, in *Archant/Independent News and Media*[72], the UK Competition Commission did not identify two distinct markets, namely a readership market and a market for the sale of advertising space. In fact, it did not define any readership market but focused solely on defining a market from the perspective of advertisers.[73]

In *Springer/ProSieben/Sat1*, the Bundeskartellamt only defined a TV advertising market and concluded that there was no market for private free-to-air (FTA) TV viewers to be defined. The argument was that it is only in the case of Pay-TV channels that there is a viewer market as viewers actually pay for receiving the

---

[69] *KinderStart.com, LLC v. Google*, 2007 WL 831806 (N.D.Cal.). The case concerned a class action against Google for damages stemming from the exclusion from Google search results. The claim was rejected by the Court in 2007.

[70] KinderStart, at para 5.

[71] Case No COMP/JV.37 -B SKY B / KIRCH PAY TV. This merger was cleared by the European Commission in 2000. With it British Sky Broadcasting Group plc ("BSkyB") acquired 24% of KirchPayTV GmbH & Co. KGaA ("KirchPayTV"). While BSkyB's principal business was the TV broadcasting in the UK and Ireland. KirchPayTV operated Pay-TV services in Germany and Austria.. The concern was that the merger would strengthen Kirch's dominant position in the German Pay-TV market and in the German market for digital interactive television services, eliminating BSkyB as a potential entrant into these markets.

[72] CC Archant Limited / Independent News and Media PLC. This merger between newspaper publishers was cleared in 2004 by the UK Competition Commission. The case concerned the acquisition by Archant Limited of the London Regionals Division of Independent News & Media (INM). While Archant was the largest privately owned local and regional newspaper group in the UK with newspapers and magazines distributed mainly in central and north-east Scotland, the South-West of England, East Anglia and the Home Counties, INM (an international media and communications group) owned The Independent and Independent on Sunday in the UK as well as the largest newspaper publisher in Northern Ireland. Its five London local newspaper divisions (Post, East London, North London, North West London and Kent) that were the subject of this transaction formed the London Regionals Division.

[73] Archant/Independent News and Media, at paras 4.1 and 4.2.

program. Conversely, there is no viewer market for private FTA TV channels, which are financed through advertising.

Yet, if one side does not pay at all, as in the business model of free-to-air TV, the market is still two-sided. In fact, as we argued above, it is exactly because the market is two-sided that one side does not pay. As a result, it is clearly not possible to analyse pricing decisions and, more generally, firms' behaviour on one side while disregarding the other side. In addition, choosing a priori to disregard the other side of the market, by not defining a relevant market for that side, implies that the market is defined as comprising only platforms which choose to charge the same side of the market. For instance, in *Springer/ProSieben/Sat1,* the claim that there is no relevant market if there is no price implies that the relevant market includes only FTA TV, without asking the relevant questions of whether FTA TV and Pay-TV are substitutes for viewers, i.e. without fully assessing product substitutability.

A similar issue arose in *News Corporation/Premiere*[74], in which the Commission only defined a market for the provision of Pay-TV services to viewers, failing to define an advertising market. The argument was based on the claim that pay-TV operators still largely relied on revenues stemming from subscription fees and, to an insignificant extent, from advertising".[75] The claim that there is no relevant market to be defined on the advertising side because a Pay-TV sells only limited advertising time implies that the relevant market can include only FTA TV, without asking the relevant questions of whether a Pay-TV could at some point find it profitable to increase its share of advertising financing.

We will come back to the issue of market definition in media markets in the next section, discussing why such an ex-ante assumption is wrong. For the moment, we highlight here that, for all the reasons discussed above, two relevant (interrelated) markets, one for advertisers and one for viewers, need to be defined in TV cases, irrespective of whether one of the two-sides does not pay.[76]

---

[74] Case No COMP/M.5121 - NEWS CORP /PREMIERE. This merger case, decided by the European Commission in 2005, concerned the acquisition by News Corporation of approximately 25% of the shares of Premiere. News Corporation is an internationally active media company in the production and distribution of TV programming, satellite and cable broadcasting as well as the development of digital broadcasting, conditional access and subscriber management systems and online programming. Premiere on the other hand is a provider of pay-TV channels in Germany and Austria offering its own and third party channels. According to the Commission the concentration would have given rise to very limited horizontal effects, but might have raised concerns with respect to vertical effects. As a result, the merger was cleared subject to remedies.

[75] Case No COMP/M.5121 - NEWS CORP / PREMIERE at para. 19.

[76] One of the few two-sided market cases in which two relevant (interrelated) markets were analyzed although customers on one side did not pay, is European Directories/Truvo Nederland, a merger between phone directories cleared in 2008 by the NMa. In such a market, clearly, advertisers pay to have their business listed, but users receive their copy of the directory for free. The analysis of the case benefited from one of the first published empirical articles on two-sided markets, namely Rysman (2004), being an analysis of the market for phone directories in the US. Nonetheless, somewhat exceptionally, but consistently with Dutch competition law practice, the "NMa made no use in this case of the standard market definition framework, but based its assessment on an analysis of effects." Case 6246 *European Directories/Truvo Nederland* [2008] NMa. at para. 89.

4 CONSIDERING BOTH SIDES OF THE MARKET

4.1 Theory

When one defines two different markets, one for each side, the issue arises of whether one should look at each side of the market independently or jointly, i.e. whether one should consider the role of the indirect network effects when defining the market. For instance, in a merger among newspapers, the question is whether one should look at the advertising side when defining the relevant market for readers and *vice versa*. The question also arises whether one should look at both buyers and merchants when one defines the market for (transactions by) payment cards.

We argue here, as also suggested by Evans and Noel (2008), that it is necessary to take all sides of the platform under consideration. A platform in a two-sided market needs both sides "on board" and is therefore competing for customers on both sides. More importantly, how much competition a platform faces in getting customers on one side also depends on its competitive position on the other and *vice versa*. We now explain why.

It is well known in the economic literature that product differentiation, whether vertical or horizontal, relaxes price competition.[77] Similarly, on each side of a two-sided market, the degree of competition faced by a given platform depends on the degree of vertical and horizontal product differentiation on that side. For example, the level of competition faced by a newspaper on the advertising side depends *inter alia* on the number of its readers compared to other newspapers. For instance, if a newspaper has many more readers than its rival, one can expect a similar price increase on the advertising side to lead to a smaller loss in advertising than if the newspapers were closer to each other in terms of copies sold. One can argue that from the advertisers' point of view newspapers are vertically differentiated in the number of readers.[78]

Moreover, the level of competition faced by a newspaper on the advertising side is also likely to depend *ceteris paribus* on the demographic composition of its readers with respect to that of the readers of rival newspapers. Different advertisers might value some demographic groups of readers more than others. If so, newspapers can also be perceived as horizontally differentiated on the advertising side. In this case, horizontal differentiation relaxes price competition. In the extreme case, if the newspaper under consideration had all the "valuable readers" for some advertisers and the rival had no "valuable readers", a given price decrease for advertising in the rival newspaper would not lead to any of these advertisers switching to the rival.

---

[77] Two products are said to be vertically differentiated (or differentiated on quality) when, if faced with the same price, all consumers would buy one of them (the one with the highest quality). Two products are instead horizontally differentiated (or differentiated on variety) when, even faced with the same price, some consumers would buy one of them and others would buy the other (because consumers have different tastes). For horizontal product differentiation see Hotelling (1929), as corrected by D'Aspremont et al. (1979). For the effects of vertical product differentiation, see instead Shaked and Sutton (1982).

[78] Indeed, some authors modeling demand for newspapers on the advertising side explicitly refer to vertical models of product differentiation. For instance Gabszewicz, Laussel and Sonnac (2001, 2002) refer to Gabszewicz, and Thisse (1979).

Both forms of differentiation should therefore be taken into account when looking for the set of products that exert competitive pressure on the product or products of the firm or firms of interest.

However, both horizontal and vertical product differentiation can be endogenous in a two-sided market. Consider again a newspaper market. We explained that from the point of view of advertisers, newspapers are likely to be vertically differentiated (because they have a different number of readers) and horizontally differentiated (insofar as they have different types of readers). But both the number and the type of readers also depend on the price charged to readers and, if readers are affected by advertising, on the price charged to advertisers, which determines the quantity of advertising in the newspaper. In addition, the number and type of readers is likely to be determined by the content of the newspaper. For instance, a sport newspaper might have a different number and a different type of readers than a financial one even if they charge the same cover price. Thus, product differentiation on one side (the advertising side in our example) may depend not only on prices but also on product characteristics on the other side (the readers' side in the example above)[79]. In other words, horizontal product differentiation on one side is linked to both the price charged and horizontal product differentiation on the other side. Hence, the competitive constraints faced by a platform can be assessed only by taking into account both sides when defining the relevant market.

The risk of neglecting one side of a two-sided market is particularly important when the product on the overlooked side is priced at zero. In such a case, one may, at first sight, think that firms are not competing on that side. For instance, one often thinks of shopping malls as renting space to retailers, failing to see that they also compete for shoppers against other malls. Yet if a shopping mall experienced a drop in the number of shoppers, it is likely that this would lead to a drop in demand for space from the shops. The mall might then be forced to lower the price charged to shops and/or experience a decrease in the number of shops and in corresponding revenues.

Similarly, one might think that phone directories compete only on the advertising side. But if a phone directory experienced a drop in advertisers, it would likely suffer not only a direct drop in profits but also an indirect drop in usage due to people finding less information in the directory. The latter would be due to the directories competing against each other for usage.

By failing to consider all sides in the definition of the relevant market one would then ignore the real competitive pressure faced by the merging firms before and after the merger. This may result in a flawed market definition and ultimately in a mistaken decision.

It is only in the particular case of a two-sided non-transaction market with only one externality, that one could safely perform a market definition exercise on that side of the market irrespective of the other side. For example, if one finds

[79] See Filistrucchi and Klein (2013) for an econometric model of a two-sided market which allows for endogenous product differentiation due to prices on the other side of the market; see instead for a model which allows for endogenous product differentiation

that advertising has no effect on the readers' side of the market, one needs to take into account the advertising market when defining the readers' market but one can safely define the advertising market irrespective of the readers' market. In fact, in that case, whatever the choices of publishers on the advertising side, they will not affect the readers' side. Hence, the platform on the advertising side of the market will not behave differently from a firm in a single-sided market.

More generally, while one always needs to consider both sides in a transaction market; it is not always necessary to consider both sides when defining the relevant market in the case of a two-sided non-transaction market. In fact, in the latter case it is only necessary to consider all the other sides towards which the side under consideration exerts an externality, either directly or indirectly.[80]

To sum up, our second suggestion is

Suggestion 2: In two-sided markets, competition authorities should take into account both sides of the market when defining the relevant market, even in the case of two-sided non-transaction markets, when they should define two interrelated markets.

It is only in a two-sided non-transaction market with only one externality, that one could safely perform a market definition exercise on the side of the market which exerts no externality on the other without considering the other side.

4.2 Practice

4.2.1 Transaction markets

In most cases involving two-sided transaction markets competition authorities correctly took into account competitive constraints on both sides of the market when defining a single relevant market.

An exception is *Nabanco vs. Visa* in the US, where indirect network effects or, more generally, externalities were not discussed. As already observed, this judgment however pre-dates the development of the theory of two-sides markets.

The US *Visa and Mastercard* judgment was, by contrast, one of the cases which helped to develop the theory of two-sided markets by focusing the attention of economists on the payment cards market. In the decision, the two-sided nature of the market was not explicitly recognized, but externalities did play a role in

[80] Indeed, in a multi-sided platform, side A could exert an externality on side B when customers on side B value more customers on side A, but it could also exert an externality on side B when customers on side B care about customers on side C and customers on side C care about customers on side A. We refer here to a two-sided market. If one were to analyze a merger in a market with more than two sides, both cases above would lead to equivalent suggestions with respect to market definition.

the analysis. It was indeed claimed that "*the merchants' demand for general purpose cards is derived from consumers' demand to use these cards*".[81]

The European Commission also recognized the need to take into account both sides of the market even as it failed to define a single market encompassing both sides. Most notably, in *Visa International-MIF*, even though the decision did not explicitly mention that the market is two-sided, the European Commission recognized that the market is characterized by network externalities. It then argued that : "*the usage of different payment systems (and thus market shares) is determined by the inter-related decisions of consumers and merchants; [...] Consequently, in order that two different payment instruments be considered as substitutable and therefore included on the same relevant inter-system market, they must be substitutable for both consumers and merchants. If one or the other user of payment instruments considers two different payment instruments as not substitutable, then those two instruments are not substitutable on the inter-system market*."[82] By contrast, in *Mastercard* the Commission explicitly recognized the two-sided nature of the market and not only the existence of positive indirect network effects between issuers and acquirers.

Turning to national competition authorities and to two-sided transaction markets different from the payment cards one, in *Bloemveiling Aalsmeer/FloraHolland,* the NMa argued explicitly that, in defining the relevant market, *"the buyers' side and the growers' side of the market must be assessed together. A change on one side of the market also has an effect on the other side of the market. The two sides of the market [...] cannot therefore be considered in isolation*."[83]

4.2.2 Non-transaction markets

In two-sided non-transaction markets, however, the market definitions adopted by competition authorities are not always consistent with our suggestion 2. While most decisions define two relevant interrelated markets, there are nevertheless cases in which competition authorities forgot to discuss one of the two indirect network effects.

For instance, in cases involving newspapers or TV, while it is generally recognised that advertisers care about the number of readers a newspaper reaches or the number of viewers a TV channel has, competition authorities often do not discuss whether readers or viewers like, dislike or are indifferent to advertisements. In practice, this is equivalent to an implicit assumption that readers or viewers are indifferent to advertising. This omission seems particularly relevant for the TV market where it is well known that viewers dislike advertising.[84]

---

[81] United States of America V. Visa U.S.A. Inc., : Visa International Corp., And : Mastercard International : U.S. District Court Southern District Of New York 98 Civ. 7076 (BSJ) page 20.
[82] Visa International at para.46.
[83] Bloemveiling Aalsmeer/FloraHolland, at para 30.
[84] In fact, empirical evidence so far seems to suggest that on average readers of daily newspapers are either indifferent to or slightly like advertising (which is usually not targeted but avoidable). So that Argentesi and Filistrucchi (2007), and Fan (2013) find no effect of advertising on the number of readers of daily newspapers in Italy, in Belgium and in the US respectively, while Filistrucchi et al. (2012a,b) find a small

In *BSkyB/Kirsch Pay TV*, the European Commission did not discuss whether viewers like or dislike advertising, It thus made the implicit assumption that viewers are indifferent to advertising. In comparing PAY-TV and FTA TV, it correctly noted that "*The fact that subscribers are prepared to pay considerable sums for Pay-TV indicates that the latter is a distinguishable product with specific extra utility*."[85] However, it did not ask the relevant question of whether this extra utility is due to higher quality of the non-advertising content or to the lower level of advertising. In other words, the European Commission did not take into account the possibility of a nuisance cost of advertising. [86]

Similarly, in *Springer/ProSieben/Sat1*, the Bundeskartellamt recognized that the number of readers is important for the demand from advertisers[87], but did not explicitly address the issue of the readers' attitude towards advertising. The Bundeskartellamt also recognized that the number of viewers both in FTA TV as well as in Pay-TV determines the channel's position on the TV advertising market. The Bundeskartellamt correctly claimed that the number of viewers was less important for public TV stations as they are financed through license fees and face time limitations for advertisements. Again, it did not address the issue of the viewers' attitude towards advertising.

The Bundeskartellamt, however, took a different approach in *Holtzbrink* where it considered both indirect network externalities to be positive. It assumed that more advertising enhances readership and argued that readers value advertisers not only *per se,* but because more advertising leads to higher revenues for the newspaper, which in turn allows the newspaper to offer higher quality journalism[88], leading to a so-called "*advertisement-circulation-spiral"*.[89]

In the US, in *Community Publishers, Inc. v. Donrey Corp*., the court also assumed that readers attach a positive value to advertising; such value however would

---

positive effect for Dutch newspapers. Readers of magazines seem instead to value positively advertising (which in that case is avoidable and more targeted). Indeed, Kaiser and Wright (2006) and Kaiser and Song (2009) find that advertising increases readers' demand for magazines in Germany. Using the same dataset, Sokullu(2010) shows that the effect of an additional ad is, in fact, positive for small levels of advertising and negative above a given threshold level. On TV, viewers seem instead dislike advertising (which is not targeted and is unavoidable). See for instance Wilbur (2008). The latter finding is confirmed in a number of communication surveys asking directly what viewers think about TV advertising. See for instance Censis(2001).

[85] Case No COMP/JV.37 - B SKY B / KIRCH PAY TV at para 25.

[86] To be fair, one should note that the decision, being of 2000, pre-dates the development of the theory of two-sided markets. As reported in Filistrucchi, Geradin and van Damme (2013), the two-sided features of media markets were already known in the economic literature, but the economic analysis had focused on the role of the externality from readers or viewers to advertisers. Hence, at the time, the decision was in line with the state of the art in economics.

[87] Springer/ProSieben/Sat1, 2006, p.64.

[88] Indeed, that more advertising implies a higher ability to invest in quality and therefore higher quality is the less common interpretation of the indirect network effect from advertisers to readers in the newspaper market. It is mentioned for instance in Gabszewicz, Laussel and Sonnac (2007) as one of the determinants of the circulation spiral for newspapers: more readers lead to more advertising which leads to higher quality which in turn leads to more readers and so on and so forth. The argument seems to rest however on the strong assumption that profits are reinvested to produce a newspaper of higher quality and that it is optimal for the firm to produce a higher quality when it is able to do so.

[89] Holtzbrinck, 2002, p.30.

derive directly from the content of the ad rather than indirectly through a higher quality of the newspaper.[90]

In *GIMD/Socpresse,* although the European Commission took into account the fact that there are two customer groups, readers and advertisers, it did not explicitly recognize that magazines are two-sided platforms. The decision argued that advertisers chose a magazine depending on which *type of readers* they want to target, but ignored that the *number of readers* is also relevant for advertisers.[91] In addition, it also argued that advertisers care about the image of the newspaper and that the image depends on the content of the newspaper. The European Commission thus claimed that also on the advertising side the market could be defined on the basis of newspaper content.[92]

In fact, as we discussed in the theory subsection above, the sign and size of the indirect network effects is crucial to understand the competitive constraints faced by a given firm on any of the two sides of the market. Disregarding such indirect network effects and analyzing one side of the market alone might lead to a wrong decision.

The failure to take into account properly the links between demands on the two sides can also be observed in the fact that many competition authorities distinguish between Pay-TV and FTA TV based on the fact that the two adopt different business models.

For instance, in *BSkyB/Kirch Pay TV*, the European Commission already claimed that Pay-TV and FTA-TV constitute separate product markets.[93] It highlighted that the definition of these two separate markets was consistent with its past practice.[94] In addition it justified the distinction by noting that in the case of TV financed by advertising, a trade relationship was established only between the program supplier and the advertiser, while in the case of Pay-TV a trade relationship is established between the supplier and the viewer via a subscription. According to the Commission, these different trade relationships lead to different conditions of competition.[95]

Also in *News Corporation/Premiere*, the European Commission argued that Pay-TV and FTA TV were still distinct markets.[96] In support of this market definition it argued that Pay-TV and FTA TV are financed differently and that it made a

[90] United States District Court, W.D. Arkansas, Fayetteville Division, US vs. Donrey Media Group, Nos. 95-5026, 95-5048, para 5.
[91] Arguably, it would have been more correct to claim that advertisers do not only care about the number of readers but care also the type of readers or, in other words, that they care about the number of readers in their target group. Empirical evidence in this regard is provided for instance in Chandra (2009).
[92] GIMD/SocPresse, 2004, at para 20.
[93] Case No COMP/JV.37 - B SKY B / KIRCH PAY TV at para 23.
[94] In particular, the decision mentions "Commission Decision 94/922/EC, MSG Media Service (OJ L 364, 31.12.1994, p. 1), paragraphs 32 and 33; Commission Decision 1999/153/EC, Bertelsmann/Kirch/Premiere (OJ L 53, 27.2.1999, p. 1), paragraph 18; Commission Decision 1999/242/EC, TPS (OJ L 90, 2.4.1999, p. 6), paragraph 25; Commission Decision 1999/781/EC, British Interactive Broadcasting/Open (OJ L 312, 6.12.1999, p. 1), paragraph 24." (Case No COMP/JV.37 - B SKY B / KIRCH PAY TV at footnote 3).
[95] Case No COMP/JV.37 - B SKY B / KIRCH PAY TV at para 24.
[96] Case No COMP/M.5121 - NEWS CORP / PREMIERE at footnote 20.

difference whether viewers had to subscribe to services in order to get access to programs as in pay-TV or whether programs could be received at no specified cost, as is the case for FTA TV.[97] Only as a last argument in support of its market definition, the European Commission referred to the lack of substitutability between the two TV services for viewers, due to the difference in content.[98]

As already mentioned, we believe that concluding that Pay-TV and FTA services constitute two distinct product markets is misguided: whether one side pays or the other (in case of advertising-financed TV advertisers pay, in Pay-TV mainly viewers pay) should not determine the relevant market(s). FTA and Pay-TV simply constitute different business models. As such they represent a choice of the firm and not a feature of the market itself. This is even more evident now that digitalization has made encryption of TV signals easier, thus allowing for the exclusion of viewers who do not pay.[99]

We do not claim that Pay-TV and FTA are substitutes for viewers. Rather we argue here that the choice of financing mechanism is not linked to demand substitutability. It is only if Pay-TV and FTA TV are not substitutes for viewers, that the type of business model might be relevant to assess supply substitutability as claimed in *News Corporation/Premiere*.[100] However, the arguments used in *News Corporation/Premiere* to justify the lack of substitutability between FTA TV and Pay-TV for viewers are not fully satisfactory. It might indeed be the case that the type of content and program schedules differ between Pay-TV and FTA services (where, for instance, premium content is often first broadcasted via Pay-TV) so that Pay-TV and FTA TV are not fully interchangeable from the viewers' perspective. Nevertheless, to support the claim that the two are not substitutes one would need an empirical assessment of the relative importance that viewers attach to content (including lower advertising) versus price.[101]

In any case, even if FTA TV and Pay-TV turned out not to be substitutes for viewers, still, arguably, one should take into account the other side of the market, even in a case involving Pay-TV stations. In fact, absent binding regulatory caps on advertising, the decision by a Pay-TV station whether to rely on advertising financing or not and the amount of such advertising is likely to depend on an assessment of the costs and benefits of advertising financing. The costs would then depend on the degree of advertising aversion of TV viewers (i.e. the strength of the indirect network externality from advertisers to readers) while the benefits would depend on the degree of competition on the advertising market for the viewers of Pay-TV. For instance, if an advertiser wanted to reach

[97] Case No COMP/M.5121 - NEWS CORP / PREMIERE at para. 15.
[98] Case No COMP/M.5121 - NEWS CORP / PREMIERE at para. 15.
[99] In the earlier economic literature on media markets, it was often claimed that TV broadcasting had a public good nature, as TV consumption was characterized by non-excludability and non-rivalry in consumption. See, for instance, Doyle (2002). Indeed, this was the case when TV first appeared. Clearly, with the introduction of signal encryption, excludability has become possible and, giving away for free the product to one side of the market has become a strategic choice of a broadcaster, similarly to that of a free newspaper.
[100] Case No COMP/M.5121 - NEWS CORP / PREMIERE at para. 19.
[101] Id. at para. 18.

viewers that watch both Pay-TV and FTA TV (possibly because Pay-TV is "*complementary (rather than substitutable) to FTA TV*", as mentioned in *News Corporation/ Premiere*[102]), then Pay-TV could be competing with FTA TV for advertising to those viewers. Vice versa, if viewers did not watch both Pay-TV and FTA TV, then Pay-TV would not be competing with FTA TV for advertising to those viewers.

One decision is worth mentioning in this respect. In BSkyB/ITV[103], the UK Competition Commission recognized that "*the parties operate in a two-sided market. This means that the companies serve two distinct sets of customers—viewers and advertisers—which are interdependent*."[104] Furthermore, the Competition Commission noticed that "*the parties [however] operate different business models, with BSkyB deriving the majority of revenues from subscription fees and ITV from advertising. The BBC operates a third business model, relying primarily on revenue from its licence fee*".[105] Interestingly, and differently from the European Commission's analysis, the UK Competition Commission did not base its market definition on the difference in business models. Rather, it more correctly based its market definition on the viewers' ability to substitute between different retail offers. The UK Competition Commission acknowledged that the parties offered differentiated products.[106] But it correctly noted that:

> *"observed price differences are not necessarily an indication of a lack of substitutability in any market. In two-sided markets suppliers can compete with one another at different price points, given the ability to generate revenue in two separate markets. For example, FTA services may compete directly for viewers with pay services, with higher viewing figures indirectly generating higher advertising revenues."*[107]

Accordingly, the UK Competition Commission defined the relevant market on the viewers' side as the UK market for all-TV, which included both Pay-TV and FTA services.[108] The Competition Commission concluded that FTA services provided a constraint to a monopolist of Pay-TV attempting to raise prices. However, it noted that it is likely that the FTA offer is a closer substitute to Pay-TV packages which include only basic channels than to those Pay-TV packages which include basic and premium channels. Thus, FTA services may be a relatively weaker constraint on those packages, which include premium channels.

---

[102] Id..

[103] CC British Sky Broadcasting Group Plc / Itv Plc. This merger in the UK TV industry was cleared subject to structural remedies in 2007. The case concerned the acquisition by British Sky Broadcasting Group (BSkyB) of 17.9% of the shares of ITV. BSkyB was a leading broadcaster of sports, movies, entertainment and news. BSkyB acquired programming to broadcast on its own channels and supplied channels on a wholesale basis to other broadcasters. Around three-quarters of BSkyB's revenues were derived from subscriptions. Advertising made up a small proportion of its revenues. ITV was the UK's largest commercial broadcaster of free-TV content. Around three-quarters of its revenues were derived from advertising.

[104] BskyB and ITV at para 4.4

[105] Id.

[106] Id. at para 4.5

[107] Id. at para 4.6

[108] The all-TV market also included Video on Demand (VoD). The advertising side of the market was defined as the UK market for television advertising.

Still, even in that decision, the Competition Commission did not take into account that viewers might dislike advertising. Hence, when discussing product differentiation, the UK Competition Commission missed the point that TV channels might also be differentiated on the amount of advertising broadcasted.[109] As a result, once again, the role of the second indirect network effect was not taken into account.

To conclude, in most cases involving two-sided non-transaction markets, competition authorities do not always correctly take into account the interrelatedness of the two-sides and thus fail to consider all competitive constraints faced by a two-sided platform. As we will see in the next section, this also manifests itself when the SSNIP test is used to assess the relevant market.

5 THE SSNIP TEST AND THE HM TEST

5.1 Theory

A commonly used tool for market definition in a traditional single-sided market is the so-called "Small-But-Significant-Non-Transitory Increase-in-Price Test" (in short the SSNIP test), which defines the market as the smallest set of substitute products such that a substantial (usually five or ten percent) and non-transitory (usually one year) price increase by a hypothetical monopolist would be *profitable*.

Starting from a set of candidate products for the relevant market, the SSNIP test is implemented by first simulating *a given price increase* above the current level[110] by a hypothetical monopolist who owns just one product[111] and, as long as that leads to estimated losses in profits, progressively increasing the number of products owned by the monopolist. When profits are not estimated to decline following a small but significant increase in price by the hypothetical monopolist, the set of products owned by the monopolist in the last simulation constitutes the relevant market.

The SSNIP test is often performed by Critical Loss Analysis (CLA), for which formulas are derived under the assumptions of constant marginal costs and

[109] BskyB/ITV at para 4.5

[110] In fact, the current level is assumed to be competitive. This is a drawback of the test giving rise to the so-called "*cellophane fallacy*" named from the Du Pont case in the US (US v. E.I. Du Pont de Nemours & Co., 351 US 377 (1956)). The issue is well-known in both theory and practice but mainly relevant for market definition in cases of abuse of dominance. Both the EU Commission Notice on the definition of the relevant market for the purposes of Community competition law (1997) at para.19, and the old US Horizontal Merger Guidelines (1992; revised in 1997) at para 1.11 comma 5 recognize the issue and suggest that, if there are reasons to believe the price is not competitive, then respectively "*the fact that the prevailing market price might already have been substantially increased will be taken into account*" and "the Agency will use a price more reflective of the competitive price". The new US horizontal Merger Guidelines (2010), para 4.1.2. comma 1, footnote 5 are a bit less explicit. "*The Market definition for the evaluation of non-merger antitrust concerns such as monopolization or facilitating practices will differ in this respect if the effects resulting from the conduct of concern are already occurring at the time of evaluation*". See also Motta (2004) p. 105 for a discussion.

[111] One of those of the merging parties in a merger case, one of those owned by the potentially dominant firm in case of abuse of dominance.

either linear or constant elasticity of demand.[112] Under these assumptions, performing a CLA is exactly identical to performing the SSNIP test. [113]

In any case, the idea behind the SSNIP test (and thus CLA) is that if the small but significant non-transitory increase in price is unprofitable, then there exists at least on close enough substitute to the product whose price is raised. If so, the two products should be in the same relevant market. And so on and so forth. Thus, both the SSNIP set an implicit benchmark for substitutability between products to be in the same relevant market.

In addition, the iterative procedure described above is designed to ensure that a relevant market is defined as the smallest set of substitute products on which a monopolist would find it profitable to increase prices by a small-but-significant amount, and therefore makes sure that the market is designed in such a way that a monopolist has market power, which is a basic requirement of economic theory.

Interesting issues arise when attempting to extend the SSNIP test to a two-sided market. Firstly, given that in a two-sided market firms set two prices, one on each side of the market, the question is which price the hypothetical monopolist should be raising. Secondly, given that in a two-sided market there are indirect network effects between demands (and therefore profits) on the two sides, the issue is whether one should consider profits on one or on both sides of the market.

Some papers, such as Evans and Noel (2005, 2008), Evans (2009) and Hesse (2007), warned against the application of a one-sided SSNIP test in defining markets when two-sided platforms are involved.

The first reason is that in a two-sided market the traditional SSNIP test cannot be applied as it is usually conceived.[114] As already noted, market definition should account for both sides of the market in order to correctly assess the competitive constraints faced by firms. The logic of the SSNIP test should thus be extended (and therefore the formulas for CLA) in order to account for the indirect network effects between the two sides of the market when judging the profitability of a price increase.

Considering a two-sided platform with sides A and B linked by positive indirect network effects, the application of a one-sided SSNIP test on side A would only account for the direct effect that a price increase will have on the demand and profits of side A. It will not account forthe fact that a reduction of the number of customers on side A is likely to lead to a reduction of the number of customers on side B so that, if the price on side B is kept constant, there would be a loss in

---

[112] Critical Loss Analysis works as follows: first, one calculates the so-called "critical loss", which is the maximum percentage loss in sales that can be sustained without a given price increase becoming unprofitable; second, the "actual loss" is defined as the expected percentage loss following the same price increase. If the actual loss is higher than the critical loss, it would not be profitable to increase prices. Vice versa, it would be profitable.

[113] CLA formulas are different in the EU and in the US, reflecting the difference between the SSNIP test and the HM test. See Werden (2002a, 2002b).

[114] See Evans and Noel, 2005, pag. 33, Evans and Noel (2008), pag. 5, Evans (2009), pag. 20 and Hesse(2007), pag. 192-193.

profits also on side B. It would also not envisage the fact that the smaller number of customers on side B will in turn reduce the demand of side A, and so on. Hence, it would also underestimate the loss in profits on side A.

Positive indirect network effects between the different sides of the platform reduce the profitability of any price increase. As there is always at least one positive indirect network effect, the risk of applying a standard SSNIP test, which does not account for feedback effects, is that in such cases the market will be defined too narrowly.

The second reason why the test should be modified is that, if one wants to use a SSNIP test (or CLA) in a two-sided market, one should follow the original rationale of the test: defining the market as the smallest set of products on which a monopoly would find it profitable (or profit-maximizing) to exercise market power by non-temporarily raising the price above the current competitive level (at least) by a small but significant percentage.[115]

In order to ensure the test is based on the same rationale, the SSNIP test in a two-sided market should take into account the changes in profits on both sides of the market and all feedback between demands on the two sides of the market following the hypothetical monopolist' raise in price.

In addition, in a market characterised by a transaction between end users (e.g. in the payment card market), the SSNIP test should be implemented by raising the price level (i.e. the price of the transaction), allowing the monopolist to optimally adjust the price structure (i.e. the ratio between the prices paid for a given transaction by the two sides).[116]

In a market without a transaction among end users (e.g. in a media market), the test should instead be implemented by raising first the price on one side of the market and then the price on the other side of the market, each time allowing the hypothetical monopolist to optimally adjust the price structure.[117] Only if the market were found to be characterized by a single externality, then the traditional SSNIP test and single-sided formulas for CLA could be applied to define the market on the side which does not exert an externality on the other.

Note that while there is consensus in the literature on the fact that one should take into account changes in profits on both sides of the market and all feedback between demands on the two sides, it is by contrast subject to debate whether the hypothetical monopolist should be allowed to optimally adjust the price structure.[118]

In particular, Evans and Noel (2008) suggest new formulas to perform CLA in a two-sided market when one wants to define two interrelated markets. These formulas are derived under the assumption of linear demands and constant marginal costs, as is usually the case in single-sided markets, but also under the

[115] See Werden (2003) for a discussion of the rationale of the HM test.
[116] See Emch and Thomson (2006).
[117] See Filistrucchi (2008) for a more detailed discussion of the SSNIP test in two-sided markets.
[118] See Emch and Thomson (2006) for the same view and Evans and Noel (2008) for a different view.

additional assumption that the hypothetical monopolist raises the price on one side while keeping the price on the other side fixed.

On the contrary, both Emch and Thomson (2006) and Filistrucchi (2008) claim that the hypothetical monopolist should be allowed to optimally adjust the price structure (i.e., roughly, the ratio of the two prices) when it is asked to raise the price on one side or the price of the transaction. They point out that a real monopolist would adjust the price structure when asked to raise the price, so that if one wants to know whether a hypothetical monopolist in the market would find it profitable or optimal to raise price on one side by a given amount, then one should allow it to optimally adjust the price structure.

In addition, Filistrucchi (2008) highlights that the logic behind the traditional SSNIP test is to define a market as the smallest set of substitute products on which a monopolist would find it profitable in the EU (or profit-maximising in the US) to increase prices by a small-but-significant amount. It is therefore designed to make sure that the market is defined in such a way that a monopolist has market power, which is a basic requirement of economic theory. In order to maintain the same rationale when dealing with two-sided markets one should allow the monopolist to optimally adjust the price structure. Filistrucchi (2008) proposes also some CLA formulas to perform the SSNIP test in a two-sided non-transaction market under the usual assumptions of linear or isoelastic demand and constant marginal costs. He then argues that, while using the standard single-sided CLA formulas would lead to the definition of a relevant market, which is too narrow, adopting the formulas proposed by Evans and Noel (2008) would lead to the definition of a market, which is too large. Indeed, not allowing the price structure to be adjusted optimally would overestimate the loss in profits due to the increase in prices, because by definition the optimal adjustment by the hypothetical monopolist will tend to reduce such a loss.

These reasons lead to our

Suggestion 3: In two-sided markets, competition authorities should employ a modified version of the SSNIP test (or of Critical Loss Analysis) that takes into account the two-sided nature of the market.

In particular,

- *in a two-sided non-transaction market one should check profitability of a rise in price on each side of the market;*
- *in a two-sided transaction market one should instead check the profitability of an increase in the price level (i.e. the sum of the prices paid for the transaction by the two parties).*

Ideally, in both cases one should allow the hypothetical monopolist to adjust the price structure.

Whether a relevant market defined too widely or too narrowly leads to the wrong decision about a merger would then depend on the case itself and on whether the merger was cleared or blocked.

If a given merger is found not to raise competitive concerns in a market defined according to the single-sided formula, *a fortiori,* it would not be found to raise competitive concerns in the larger market defined according to the correct two-sided formula.

Similarly if a given merger is found to raise competitive concerns in a market defined according to a two-sided formula which does not allow the monopolist to adjust the price structure, *a fortiori,* it would be found to raise competitive concerns in the smaller market defined according to the correct two-sided formula.

In the other cases, i.e. when a merger is blocked in a market, which has been defined too narrowly or a merger is cleared in a market, which has been defined too widely, an incorrect market definition might indeed lead to an incorrect decision.

In cases when dominance needs to be assessed in order to evaluate a possible abuse or to decide about regulation of an incumbent, if the firm is not found dominant in a market defined according to the single-sided formula, *a fortiori,* it would not be found dominant in the larger market defined according to the correct two-sided formula.

On the contrary, if the firm is found dominant in a market defined according to the single-sided formula, it might not be found dominant in the larger market defined according to the correct two-sided formula.

These arguments lead to our

Suggestion 4: In a two-sided non-transaction market, a single-sided SSNIP test can still provide evidence on the lower bound to the relevant market.

Both in two-sided transaction and non-transaction markets a two-sided SSNIP test which does not allow the hypothetical monopolist to optimally adjust the price structure can instead provide evidence on the upper bound to the relevant market.

5.2 Practice

5.2.1 Transaction markets

In practice, only a few decisions involving two-sided platforms explicitly mention that a SSNIP test was conducted and report the results.[119]

In the US *Visa and Mastercard* case, the court only discussed whether consumers would switch away from credit cards following a SSNIP by a hypothetical monopolist, but did not discuss merchants' reactions to such a price increase. This was consistent with the claim, referred to above, that merchants demand

[119] In fact, many decisions we have discussed in previous sections, such as *Travelport/Worldspan* and *Google/DoubleClick*, do not explicitly mention whether a SSNIP test was applied to define the relevant market. Even when decisions report that a SSNIP test was conducted, they do not in general report how it performed and/or which formulas were used. Indeed, this information is usually contained in preparatory documents, which are often not made public.

was derived from their clients' demand. Hence the SSNIP test was performed on one side as if it were a single-sided market.

Turning to the EU, in *Mastercard* the Commission explicitly refused to carry out a SSNIP test on the sum of the transaction fees charged to merchants and cardholders as suggested by Emch and Thomson (2006). It correctly argued that this would have been inconsistent with its refusal to define a single market encompassing both sides. It also refused to perform a single-sided SSNIP test on the acquiring market, due to the understandable concern that a SSNIP test in a case which concerned an agreement between banks might be prone to the cellophane fallacy.

In particular, in arguing against a SSNIP test on the sum of the transaction fees, the Commission explicitly criticized the paper by Emch and Thomson (2006) claiming the model was too simplistic. First, according to the Commission, using their suggested SSNIP test would imply assessing 4-party payment cards schemes as if they were 3-party schemes. Second, their proposed SSNIP test was based on fixed marginal costs.

With regard to the latter argument it is sufficient to recall that the SSNIP test is in practice usually carried out by CLA and that the formulas used are based on constant marginal cost (and either linear or constant elasticity demand).

We consider instead the former argument quite misleading. In fact, in order to be able to analyze whether, for end-users, payment cards of a 3-party system are substitutes for payment cards of 4-party systems one needs exactly a test which can be performed if both types of platforms are present in the relevant market. Let us consider the case of a car market, where brand A is vertically integrated and brand B is not. If the question is whether brand A and brand B are substitutes for consumers it would not make sense to have a test which applies only to brand A and one which applies only to brand B. The SSNIP test in a single-sided market aims at measuring substitutability irrespective of the market structure. The same should do a two-sided SSNIP test.

Finally, we note that the necessity to define only a single market for transactions and the need to run a SSNIP test on the sum of the end-users fees does not derive from the model of Emch and Thomson (2006) being right, but from the arguments we brought above in support of our suggestions. Their model should be seen as an illustration of the point. In fact, contrary to Filistrucchi (2008) for two-sided non transaction markets, they do not provide formulas to perform CLA.

Turning to national competition authorities, in *Mastercard*, consistently with its decision to define a wholesale market, an issuing market and an acquirer market, the OFT considered the implications of a SSNIP test for each of these markets. Somewhat surprisingly, to define the boundaries of each of these markets, it chose to perform the test by raising the interchange fee. While for the wholesale market this is consistent with its view that there exists a market for the clearing of the transactions between issuing and acquiring banks, the choice to perform a

SSNIP test on the interchange fee in the issuing and acquiring markets seems to depart completely from the way a SSNIP test is performed in single-sided markets. Considering for instance the acquiring side of the market, for the acquiring banks the interchange-fee is a marginal cost for each transaction. Hence, assuming there is indeed a necessity to define separate issuing and acquiring markets, the SSNIP test the OFT applied is a test which raised the marginal cost rather than the price. As a result, substitutability between products was not measured as a result of a change in price but as a result of a change in marginal cost. Unless the rate at which increases in the marginal costs are passed through to prices were equal to one, in practice this is a much different test from the usual one. Last, but not least, even assuming the need to define separate markets, the suggested SSNIP test did not properly take into account the role of indirect network effects.

A notable exception among cases involving two-sided transaction platforms is the decision on *Bloemenveiling Aalsmeer/FloraHolland*, in which the NMa discussed at length the application of CLA to define the relevant market and discussed the effects of the two-sidedness of the market, although it did not apply a specific two-sided test.[120] In particular, the NMa started by explicitly endorsing a CLA approach to the definition of the relevant market. [121] In fact, it ran a survey of buyers and sellers of flowers and plants at the auction houses in which it asked how they would react to a "*deterioration of various parameters of competition*".[122] It first calculated the critical losses.[123] Then it calculated the actual losses.[124] It finally compared, for each side of the market, the actual losses and the critical losses and found that the actual losses were higher than the critical losses both for growers and buyers. From this, the NMa drew the conclusion that the relevant product market was larger than the one for sales of ornamental horticultural products through auctions.[125]

Importantly, the NMa acknowledged that the CLA formulas it used did not account for the two-sidedness of the market.[126] It assessed the impact of indirect

[120] Case 5901/184 *Bloemenveiling Aalsmeer/FloraHolland* [2007] NMa (para 62-78).
[121] Case 5901/184 *Bloemenveiling Aalsmeer/FloraHolland* [2007] NMa (para 61).
[122] The NMa discussed the results of the survey extensively. Case 5901/184 *Bloemenveiling Aalsmeer/FloraHolland* [2007] NMa (para 46-62).
[123] The NMa reported the calculated critical loss percentage of 10.1% corresponding to a 5% price increase, with a range between 9.6% and 10.5% if variable costs were allowed to be 5% lower or higher. Case 5901/184 *Bloemenveiling Aalsmeer/FloraHolland* [2007] NMa (para 62).
[124] This led to minimum actual losses on the growers' side of 10.8% and 13.8% on the buyers' side. Case 5901/184 *Bloemenveiling Aalsmeer/FloraHolland* [2007] NMa (para 73).
[125] The NMa then did not proceed with critical loss analysis until it reached a definition of the relevant market but followed a more qualitative approach in order to determine which additional products were to be added to the relevant market. Based on the results of the survey of buyers and growers, it concluded that the different sales channels (inside and outside the auctions) were substitutes for each other to such a degree that they should be included in the same relevant market. Hence, the market was finally defined as the one for *trade in ornamental horticultural* products, thus including also direct sales. Case 5901/184 *Bloemenveiling Aalsmeer – FloraHolland* case 5901; para 75-78.
[126] "[In the Critical loss Analysis] the two-sided character of the market was not taken into account. As a result, it is plausible that switching by growers (as a result, for instance, of higher commission) will lead to the departure of buyers and vice versa. The effect of a less attractive situation for growers (buyers) on the auction due to the switching of buyers (growers) was not taken into account when calculating the actual loss." Case 5901/184 Bloemenveiling Aalsmeer – FloraHolland case 5901; para 74.

network effects on the CLA and correctly concluded that the actual loss was in fact higher than the one which was calculated.[127] The NMa failed to note however that also the critical loss formula would change as a result of the two-sidedness of the market.[128]

More generally, although the NMa correctly realized that the two-sidedness of the market should play a role in the definition of the relevant market, it did not however fully realize the implications, in this regard, of the transactional nature of the market. According to our discussion above, in a two-sided transaction market the test should have been conducted by raising the price level, i.e. the sum of the fees charged to sellers and buyers, possibly using formulas for critical loss and actual loss which allowed the hypothetical monopolist to adjust optimally the price structure, i.e. the ratio of the fees. The NMa instead discussed the implications of two-sidedness for the definition of the relevant market as if the market were a two-sided non-transaction market.

5.2.2 Non-transaction markets

Turning to two-sided non transaction markets, in *BSkyB/ITV* the UK Competition Commission adopted the SSNIP test approach to the definition of the relevant market, focusing on the substitutability of products from the end-users perspective as well as supply-side substitution.[129] As already noted, the UK Competition Commission recognized the two-sided nature of the market. It also acknowledged that two-sidedness made the application of a standard SSNIP test difficult. Hence, it decided to *"use the conceptual framework of the SSNIP test, relying as appropriate on a variety of qualitative and quantitative evidence*" to define the relevant markets.[130] However, neither the decision to include both FTA TV and Pay-TV in the same relevant market nor the decision to include also Video-on-Demand (VoD) in the relevant market refer to the SSNIP test explicitly.[131] Only when a further extension of the relevant market to Internet TV and DVD was considered, was the SSNIP test explicitly recalled, although the discussion was in fact mainly qualitative.[132] As a result, in practice, a quantitative SSNIP test was not really carried out and the two-sided nature of the market played a role only in the qualitative argumentation.

Also in *Archant/Independent News and Media,* the UK Competition Commission used a SSNIP test to define the relevant market. However, as already mentioned,

---

[127] "The interaction between the two sides of the market results in reduced attractiveness of the marketplace for the one side of the market if switching occurs on the other side of the market, and vice versa. For instance, the switching of growers described, which would occur if a hypothetical deterioration of the parameters of competition were to occur, would also cause buyers to switch and vice versa. The actual loss would be higher than calculated for the separate types of deterioration in the parameters of competition due to this effect switching on the one side of the market, which is caused by switching on the other side." Case 5901/184 Bloemenveiling Aalsmeer – FloraHolland case 5901; para 74.
[128] See Filistrucchi (2008).
[129] BSkyB/ITV at para 4.3.
[130] BSkyB/ITV at para 4.7.
[131] BSkyB/ITV at para 4.22.
[132] Idem at para 4.27

in that case the two-sided nature of the market did not play a role in the market definition exercise and only the advertising side was analysed.[133] Hence, the issue of whether the two-sided nature of the market, and in particular the presence of indirect network effects, should affect the test was not touched upon. According to our suggestion 4, the UK Competition Commission correctly defined the relevant market for advertising only if the implicit assumption that readers are indifferent to advertising was correct. Otherwise the market was defined too narrowly.[134]

All in all, none of the competition authorities appear to have applied a specific two-sided market formula to perform the SSNIP test. This may be due to the slight disagreement in the literature with regard to the right two-sided formulas, but it is due more likely to the higher data requirements and the relatively higher complexity of two-sided formulas.

6 CONCLUSION

We reviewed the literature on market definition in two-sided markets. In our opinion, there appears to be a consensus on the fact that the two-sided nature of the market should play a role when defining the relevant market. We showed that, with some noticeable exceptions, this is increasingly recognised also by competition authorities.

Based on the economics of two-sided markets, we highlighted a crucial distinction between two-sided transaction and non-transaction markets. We then provided suggestions for the definition of the relevant market in cases involving two-sided platforms. We also analysed whether the current practice of market definition in two-sided markets is consistent with the above suggestions.

First, consistently with the objective of market definition, we argued that in a two-sided non-transaction market one should define two interrelated markets and in a two-sided transaction market one should define a single market. For the latter type of market we showed that this is consistent with the practice of market definition in recent cases, but for the former type of market there appears to be some confusion in the competition authorities' practice. In particular, we highlighted a worrying tendency to define only one market when customers on the other side do not pay. Typically, this has led in a number of cases to the relevant market having potentially been defined as too small.

Second, we argued that, not only when defining a single market but also when defining two interrelated markets, one should take both sides of the market into account. Unfortunately, only a few decisions, even when recognizing the two-

[133] See Archant/Independent News and Media, at para 4.2.
[134] Since the merger was cleared by the UK competition commission, the final decision would not have changed if the market had been defined less narrowly.

sided nature of the market, have done this correctly. Again, this might have lead in some cases to the market being defined too narrowly.

Finally, drawing from the economics of two-sided markets, we argued that in such markets the SSNIP test cannot be applied in its traditional form. Although the same logic underlying the traditional test can be extended to a two-sided setting, the test needs to be redesigned in order to take into account the two-sided nature of the market. Indeed, due to the interrelatedness demands on the two sides of the market, the profit of a hypothetical monopolist who raises the price in a significant non-transitory way on one-side of the market is linked to the profit in the other market. Moreover, since in a two-sided market there are usually two prices and profit-maximizing prices are interdependent, it is not a priori clear whether the hypothetical monopolist should raise only one price, both prices, or the sum of the two (i.e. the so-called *price level*). In addition, if one believes in the first or in the third option, it is not self-evident whether the hypothetical monopolist should be allowed to optimally adjust the ratio of the two prices (i.e. the so-called *price structure)*.

Therefore, we also addressed these issues. We claimed that there is a consensus in the literature on the fact that profits on both sides of the market should be taken into account. In addition, consistently with the need to define two markets, in two-sided non-transaction markets the SSNIP test should be implemented by raising first the price on one side of the market and then the price on the other side of the market. Conversely, but consistent with the need to define only one market, in two-sided transaction markets the SSNIP test should instead be implemented by raising the price level (i.e. the price of the transaction). We recognized there is some debate as to whether the hypothetical monopolist should be allowed to optimally adjust the price structure. Our claim is that the correct formulas should allow the hypothetical monopolist to do so, as discussed in Emch and Thomson (2006) and Filistrucchi (2008). We therefore disagree in this regard with Evans and Noel (2008). In our opinion, while as recognised in the literature traditional formulas would lead to the definition of a relevant market which is too narrow, the formulas they propose would lead to a relevant market which is too large.

Maybe due to the disagreement in the literature, but also to the higher data requirements and the relatively higher complexity of two-sided formulas, while in a couple of cases competition authorities correctly acknowledged the implications of using traditional single-sided formulas, so far none of the competition authorities appear to have applied a specific two-sided market formula to perform the SSNIP test.

Finally, we also discussed when a one-sided approach is harmless and when instead it can potentially lead to a wrong decision. We argued that only in the case of a two-sided non-transaction market, and only when one side does not exert an externality on the other side, can one proceed to define the relevant market on the first side irrespective of the presence of the other side (but then this would not be true for the second side, as the latter must necessarily exert an externality on the first side if the market is two-sided). We also argued that, in

most cases, applying a one-sided approach, including a one-sided SSNIP test, would lead to the definition of a market which is too narrow. As a result, one might make a mistake only when the narrow market definition is a decisive element to block a merger, to establish an abuse of dominance or to impose a regulatory burden.

REFERENCES

Affeldt, P., Filistrucchi, L., and T.J. Klein (2012). "Upward pricing pressure in two-sided markets", TILEC Discussion Paper n° 2012-029.

Argentesi, E, Filistrucchi L. (2007). "Estimating Market Power in a Two-Sided Market: The Case of Newspapers". *The Journal of Applied Econometrics*, 22(7); 1247 – 1266.

Baxter, W.F. (1983). "Bank Interchange of Transactional Paper: Legal and Economic Perspectives", Journal of Law and Economics, 26 (3); 541-588.

Brenkers, R. and Frnak Verboven, (2006). "Market Definition with Differentiated Products -- Lessons from the Car Market", in Jay Pil Choi (ed.) *Recent Developments in Antitrust: Theory and Evidence*, MIT Press.

Censis, (2001). Primo Rapporto Annuale sulla Comunicazione in Italia,Offerta di Informazione e uso dei media nelle famiglie italiane, Censis.

Chandra, A. (2009), "Targeted Advertising: The Role of Subscriber Characteristics in Media Markets," *Journal of Industrial Economics*, 57(1), 58-84.

D'Aspremont, C., Gabszewicz, J. and J.-F. Thisse (1979). On Hotelling's stability in competition. Econometrica, 47, 1145–1150.

Damme, E. van, L. Filistrucchi, D. Geradin, S. Keunen, T. Klein, T. Michielsen and J. Wileur, (2010): "Mergers in Two-Sided Markets – A Report to the NMa", Netherlands Competition Authority, pp. 1-183.

Doyle, G. (2002): "Understanding Media Economics". Sage Publications, pp. 1-184.

Emch E and T.S. Thomson (2006). "Market Definition and Market Power in Payment Card Networks, *The Review of Network Economics*, 5(1); 45 – 60

Evans, D.S. (2003). "The Antitrust Economics of Multi-Sided Platform Markets", *Yale Journal on Regulation*, 20(2);325-381.

Evans, D.S. (2009). "Two-Sided Market Definition", *Market Definition in Antitrust: Theory and Case Studies*, ABA Section of Antitrust Law.

Evans, D.S and M.D. Noel (2005). "Defining Antitrust Markets When Firms Operate Two-Sided Platforms." *Columbia Business Law Review*, 667-702

Evans, D.S. and M.D. Noel (2008). "The Analysis of Mergers that involve Multisided Platform Businesses", *Journal of Competition Law and Economics*, 4(3), 663-695.

Fan, Y. (2013). "Ownership Consolidation and Product Characteristics: A Study of the U.S. Daily Newspaper Market", American Economic Review, forthcoming.

Farrell, J. and C. Shapiro (2010). "Antitrust Evaluation of Horizontal Mergers: An Economic Alternative to Market Definition", *The B.E. Journal of Theoretical Economics*, 10(1), Article 9.

Filistrucchi, L. (2008). "A SSNIP Test for Two-Sided Markets: The Case of Media", *NET institute working paper* n°08-34.

Filistrucchi, L. (2010). "How many markets are two-sided?", The CPI Antitrust Journal, July (2).

Filistrucchi, L., Geradin D. and Eric van Damme (2013). "Identifying Two-Sided Markets", World Competition, 36(1); 33-60.

Filistrucchi L. and Tobias J. Klein (March 2013). "Price Competition in Two-Sided Markets with Heterogeneous Consumers", mimeo.

Filistrucchi L., Klein T. and T. Michielsen (2012a), "Assessing Unilateral Merger Effects in a Two-Sided Market: An Application to the Dutch Daily Newspaper Market", Journal of Competition Law and Economics, *forthcoming*

Filistrucchi, L., T.J. Klein, and T.O. Michielsen (2012b), "Assessing Unilateral Merger Effects in the Daily Newspaper Market", in: J. Harrington, Y. Katsoulakos and P. Regibeau (eds.): Advances in the Analysis of Competition Policy and Regulation, Edward Elgar Publishing.

Gabszewicz J.J., Garella P. and N. Sonnac (2007). "Newspapers market shares and the theory of the circulation spiral", *Information Economics and Policy*, vol. 19(3-4), pages 405-413.

Gabszewicz J.J., Laussel, D. and N. Sonnac (2002). "Press Advertising and the Political Differentiation of Newspapers", *Journal of Public Economic Theory,* 4(3), 317-34.

Gabszewicz J.J., Laussel, D. and N. Sonnac (2004). "Programming and Advertising Competition in the Broadcasting Industry". *Journal of Economics and Management Strategy,* 13(4), 657-69.

Gabszewicz, J.J., Thisse, J.-F. (1979). „Price competition, quality, and income disparities". *Journal of Economic Theory* 20, 340-359.

Hagiu, A. (2007). "Merchant Or Two-Sided Platform?", *Review of Network Economics* 6(2), 115-133.

Hesse, R.B. (2007). "Two-Sided Platform Markets and the Application of the Traditional Antitrust Analytical Framework", *Competition Policy International*, 3(1), 191-195.

Hotelling, H. (1929). "Stability in Competition". *The Economic Journal*, 39, 41-57.

Kaiser, U. and J. Wright (2006). "Price Structure in Two-Sided Markets: Evidence from the Magazine Industry". *International Journal of Industrial Organization*, 24, 1– 28

Kaiser, U. and M. Song (2009). "Do media consumers really dislike advertising? An empirical assessment of the role of advertising in print media markets", *International Journal of Industrial Organization,* 27, 292 – 301.

Lopatka J.E. (2001). "Market Definition", *Review of Industrial Organization*, vol. 39 (1-2), pages 69-93.

Motta, M. (2004). Competition Policy: Theory and Practice, Cambridge University Press.

Rochet, J-C and J. Tirole (2002). "Cooperation among Competitors: Some Economics of Payment Card Associations", The RAND Journal of Economics, Vol. 33(4); 549-570.

Rochet, J-C and J. Tirole (2003). "Platform Competition in Two-Sided Markets". *Journal of the European Economic Association,* 1(4), 990-1029.

Rochet, J-C and J. Tirole (2006). “Two Sided Markets: A Progress Report”. *Rand Journal of Economics,* 37(3), 645-667.

Rooney, W.H. and D.K. Park (2007). “The Two-Sided Market Literature Enriches Traditional Antitrust Analysis”, *Competition Policy International*, 3(1), 211-219.

Rysman, M. (2004). “Competition Between Networks: A Study of the Market for Yellow Pages”, *Review of Economic Studies* 71(2): 483-512.

Rysman, M. (2007). “Empirical Analysis of Payment Card Usage”, *Journal of Industrial Economics*, 60, 1-36.

Shaked, A. and J.Sutton (1982). "Relaxing Price Competition through Product Differentiation," *Review of Economic Studies*, vol. 49(1), 3-13.

Sokullu, S. (November 2010). “Nonparametric Analysis of Two-Sided Markets”, mimeo.

Veiga, A. and E. Glen Weyl (May 2012). “Multi-dimensional product design”, mimeo.

Werden, G.J. (2002a). “Beyond Critical Loss: Tailoring Applications of the Hypothetical Monopolist Paradigm”, *US DOJ Antitrust Division Economic Analysis Group* Discussion Paper No. 02-9.

Werden, G.J. (2002b). “Market Delineation Algorithms Based on the Hypothetical Monopolist Paradigm”, *US DOJ Antitrust Division Economic Analysis Group,* Discussion Paper No. 02-8.

Werden, G.J. (2003). “The 1982 Merger Guidelines and the Ascent of the Hypothetical Monopolist Paradigm”, 71 *Antitrust L.J.* , 253–276.

Wilbur, K.(2008). “A two-sided, Empirical Model of Television Advertising and Viewing Markets”. *Marketing Science*, Vol. 27, 356-378.

Wright, J. (2004): “One-sided Logic in Two-Sided Markets”. *Review of Network Economics*, 3(1), 44-64.